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ABSTRACT

A psycholinguistic analysis of oral reading miscue substitutions and of silent reading cloze substitutions was used to compare five dimensions of the oral and silent reading processes: grammatical function, syntactic acceptability, semantic acceptability, meaning loss, and correction. Subjects were third and sixth grade students with high, average, and low reading ability. Four stories selected from a reading miscue inventory were each used in an oral reading test form and in a silent reading test form. Each subject was tested individually in two sessions on two separate days, receiving the oral test on one day and the silent reading test on another day. Among the study's findings were the following: (1) both reading processes seem to be similar, (2) reading processes appear to differ more among ability groups than between third and sixth grade readers or between oral and silent reading, (3) readers of varying abilities make a high number of substitutions that retain grammatical function, (4) readers of varying abilities seem to make high numbers of substitutions that are syntactically acceptable and low numbers that are unacceptable, (5) some differences between oral and silent reading are indicated by the semantic acceptability dimensions, (6) sixth grade readers make a smaller percentage of substitutions that are totally semantically acceptable at the story level than third grade readers during oral reading, and (7) readers of high ability make higher percentages of substitutions that are semantically acceptable at the story level than all other categories combined. (HOD)

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A DESCRIPTION OF THE PSYCHOLINGUISTIC DIMENSIONS OF THE ORAL AND SILENT READING PROCESSES BY THIRD-GRADE READERS OF HIGH AND AVERAGE ABILITY AND SIXTH-GRADE READERS OF HIGH AND LOW ABILITY

A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF MASTER OF ARTS IN READING

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

COLLEGE OF EDUCATION

BY

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DENTON, TEXAS

AUGUST 1983

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CHAPTER I

INTRODUCTION

The psycholinguistic model is one of several theoretical explanations for the extremely complex process called reading. This model describes the reading process as reconstructing meaning from print mainly by the reader's use of cognitive and language competence, an interaction between thought and language. The process involves selecting language cues from perceptual input based on the predictions of the reader. During the processing and as reading progresses, the predictions are confirmed, rejected or refined (K. Goodman, 1967; F. Smith, 1978a).

The reader's schema toward a subject plays a key role in his/her reading of material on that subject (Pearson & Johnson, 1978). A schema refers to the reader's experience and network of concepts regarding any subject. "Comprehension consists of relating the new to the known" (p. 34).

Readers use visual and nonvisual information while reading (F. Smith, 1978b). Visual information, the print on the page, though necessary for reading, is not sufficient. Nonvisual information, such as knowledge of language and schemata, is important. A reciprocal relationship exists between visual and nonvisual information.

> Within certain limits, one can be traded off for the other. The more nonvisual information a reader has,

> the less visual information the reader needs. The less nonvisual information that is available from behind the eyes, the more visual information is required (Smith, 1978b, p. 5).

Redundancy is another important aspect of the reading process. It exists whenever the reader has overlapping information, whether visual, nonvisual or both. Readers require less visual information when there is redundancy (Smith, 1978b).

The Reading Miscue Inventory (RMI) (Y. Goodman & C. Burke, 1972a), was designed for studying a reader's psycholinguistic processing while reading orally. Researchers using the RMI have found that the psycholinguistic strategies of more proficient readers differ from those of less proficient readers (Au, 1977; Bean, 1978; D'Angelo, 1980; Y. Goodman, 1971; K. Goodman & C. Burke, 1973; Greene, 1975; Leslie, 1980). There is evidence also, that strategies differ among children according to age (E. Burke, 1976; Menosky, 1972; Schlieper, 1977). These findings apply only to oral reading.

Little is known about the silent reading process since silent reading tests characteristically do not monitor the process while it is happening. The cloze procedure is an exception. This silent reading test seems to monitor the silent reading process. Recently it has been used for studying psycholinguistic processing and with the RMI for comparing oral and silent reading processes. Little research has

been done in this area. Teachers traditionally have treated the two processes the same in their diagnosis and instruction of students. If the underlying processes are similar, teachers can safely generalize oral reading assessments to silent reading but if not, this traditional approach may be questionable.

This study dealt with the question: Will psycholinguistic analyses of oral and silent reading dimensions indicate that the processes are different, and will those processes differ for third and sixth graders and for readers of high and average reading proficiency levels at the third grade level and for readers of high and low reading proficiency levels at the sixth grade level?

Specifically, the study descriptively answered the following questions:

(1) What percent of the cloze/miscue substitutions serve the same grammatical function as the author's intended word?

(2) What percent of the cloze/miscue substitutions result in a syntactically acceptable construction?

(3) What percent of the cloze/miscue substitutions result in a semantically acceptable construction?

(4) What percent of the cloze/miscue substitutions result in a loss of meaning?

(5) What percent of the cloze/miscue substitutions

are corrected?

(6) What trends are observed in the cloze/miscue substitutions in the above five areas for students at two grade levels at differing levels of reading ability?

Definition of Terms

This study employed the following general and operational terms:

General Terms

Miscue: The term "miscue" is used in place of oral reading error. A miscue is "an actual observed response in oral reading which does not match the expected response" (K. Goodman, 1973, p. 5).

Quantitative analysis: Scores are computed on the basis of the number of errors made.

Qualitative analysis: Each miscue is examined to determine which language cuing systems are involved (Y. Goodman & C. Burke, 1972a).

Strategies: The reader's choices of cuing systems and correction behavior are called strategies.

Cuing systems: There are three sources of available information from which the reader chooses: grapho-phonemic, syntactic and semantic (Cambourne, 1977; K. Goodman, 1969).

Substitution (miscue): An oral response which differs from the expected response to a word or words in

the printed text is called a substitution (See examples in Y. Goodman & C. Burke, 1972a, p. 29).

Substitution (cloze): A cloze response which is not the exact word in the original printed text is called a substitution (Cambourne's, 1977, "Not-Exact-Replacements").

Graphophonemic cues: According to K. Goodman's (1969) definition,

> This is the information from the graphic system, and the phonological system of oral language. Additional information comes to the reader from the interrelationships between the systems (p. 15).

Cambourne (1977) calls these cues "the shapes and sounds of print" (p. 2).

Syntactic cues: According to K. Goodman (1969),

> This is the information implicit in the grammatical structures of the language. The language user knows these and, therefore, is able to use this information before he learns to read his native language (p. 15).

Cambourne's (1977) definition is "a reader's 'feel' for the way language flows" (p. 2).

Semantic cues: According to K. Goodman (1969),

> As he strives to recreate the message, the reader utilizes his experiential conceptual background to create a meaning context. If the reader lacks relevant knowledge, he cannot supply this semantic component and he cannot read. In this sense, all readers regardless of their general reading proficiency are incapable of reading some material in their native language (pp. 15, 16).

Cambourne's (1977) definition is

> a reader's knowledge of the story line or topic being read about and his ability to build up in a cumulative and logical fashion a coherent and meaningful representation of the story as it unfolds (p. 2).

Correction behavior (miscue): "When a reader becomes aware that he has made a miscue, he may attempt to correct either silently or orally, or he may choose to continue reading without correcting" (Y. Goodman & C. Burke, 1972a, p. 58).

Correction behavior (cloze): When a reader becomes aware that s/he has made an error, s/he may attempt to correct by crossing out the word and writing the new answer above it, or s/he may choose to continue reading without correcting.

Miscue analysis: Miscue analysis is a qualitative analysis of a reader's miscues and how they relate to the responses expected from the print s/he is reading. It gives insights into the reader's strategies and the reading process (K. Goodman, 1973).

Reading Miscue Inventory (RMI): The RMI is a testing procedure developed by Yetta Goodman and Carolyn Burke. Reader profiles are made up of five miscue analyses scores and a retelling score (Buros, 1978; Y. Goodman & C. Burke, 1972a).

Cloze procedure: The cloze procedure is a missing word

technique for measuring reading comprehension and readability of materials. The cloze tests for this study were patterned, for the most part, after Bormuth's (1966, 1968, 1969) guidelines, i.e., at least 50 words were deleted and replaced with underlined blanks 15 typed spaces long, first and last portions of the stories remained intact; only the responses which exactly matched the deleted words were scored as correct and misspellings were counted as correct if they were intelligible.

Every nth: A predetermined number is used for counting out words to be deleted, such as every fifth word or every seventh word.

Structural deletions: Every nth word is deleted from the text, sampling a variety of clues such as function words, morphological clues and word order (Rankin, 1974).

Lexical deletions: Every nth noun, main verb or adjective is deleted from the text, emphasizing the understanding of substantive content (W. Weaver & Kingston, 1963).

Operational Terms

Good readers: Readers who were identified as good readers by their teacher and who scored in the seventh, eighth or ninth stanine on the Passage Comprehen-

sion subtest of the Woodcock Reading Mastery Test (1974) are called good readers in this study.

Average readers: Readers who were identified as poor readers by their teacher but who scored in the fifth or sixth stanine on the Passage Comprehension subtest of the Woodcock Reading Mastery Test are called average readers in this study.

Poor readers: Readers who were identified as poor readers by their teacher and who scored in the third or fourth stanine on the Passage Comprehension subtest of the Woodcock Reading Mastery Test are called poor readers in this study.

Suburban school district: A school district serving a residential community with a median annual income of $33,200 adjacent to one of the ten largest cities in the United States is called a suburban school district (Note 1).

Assumptions and Limitations

Assumptions

Assumptions were made regarding sample selection, subject performance and the materials used: (1) The sixth-grade teachers correctly identified good readers and poor readers at the sixth-grade level and the third-grade teachers correctly identified good readers and poor readers at the third-grade level; (2) The Passage Comprehension subtest of

the Woodcock Reading Mastery Test was an adequate screen to assure that the samples of good, average, and poor readers were correctly identified; (3) The subjects' effort and performance of the tasks were representative of their usual reading behaviors; (4) The materials selected for the tasks were representative of the sphere of reading materials that the subjects normally read; and (5) Cloze substitutions are reflective of reader psycholinguistic processing in the same manner as are miscue substitutions.

Limitations and Delimitations

The results of the study, while appropriate for a similar sample, should not be generalized beyond the sample. Factors beyond the control of the present examiner produced a sample almost entirely made up of white students from middle and upper-middle socioeconomic families. The sample of third-grade average readers chosen were originally intended to be a sample of poor readers and were identified as poor readers by their teachers. Their scores on the Passage Comprehension subtest of the Woodcock Reading Mastery Test, however, indicated that this was a sample of average readers (fifth and sixth stanines) instead of poor readers (third and fourth stanines).

The time of year in which data collection occurred, April (third grade) and May (sixth grade), is a possible limitation, especially for the sixth-grade sample. The stu-

dents, however, seemed to be pleased at being able to take part in the project and seemed to be eager to do their best. A Hawthorne effect, therefore, may affect the results.

Another delimitation is found in the materials used. Passages were chosen from the Reading Miscue Inventory--Practice Analysis Manual: Procedure for Diagnosis and Evaluation (Y. Goodman & C. Burke, 1972b) because these selections represented complete stories and had been used a great deal in miscue research, but the stories finally used were not equally appropriate in readability level. For both grades, one story was a bit easier than the other. Additionally, no control for the kind of story, student interest or student familiarity with subject matter was made.

Finally, the validity of both the cloze procedure and miscue analysis has been questioned. Cloze has been criticized because of the inconclusive evidence for its construct validity (Alderson, 1978; E. Jongsma, 1971) and miscue analysis because of the reliability of its scoring techniques (Groff, 1980; Leu, 1982; Singer, 1978).

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter is to review the literature regarding miscue analysis and cloze procedure and the contributions this literature has made to reading research, specifically to the psycholinguistic theory of reading. The material is presented under three headings: (1) studies using miscue analysis; (2) studies using cloze procedure; and (3) studies using both miscue analysis and cloze procedure. Many of the materials read were dissertation abstracts because that was the only way those studies were accessible to the researcher. Sometimes the reviewer's criticisms of a study were a function of the limited description provided in the abstract. In the actual study, more information may have been available to the reader.

MISCUE ANALYSIS

The Theory

The theory behind miscue analysis began at Wayne State University in 1963 under the direction of Kenneth Goodman (1973a). The work of Goodman and his associates evolved into the Reading Miscue Inventory (RMI) (Y. Goodman & C. Burke, 1972a) and the development and refining of the Goodman Taxonomy of Oral Reading Miscues (P. Allen & Watson, 1976). This theory is an outgrowth of psycholinguistic thinking.

K. Goodman (1967) calls reading "a psycholinguistic guessing game." He defines psycholinguistics as a scientific study of the interrelation of thought and language, and as such is basic to understanding how readers read and learn to read. "Reading is a complex process by which a reader reconstructs, to some degree, a message encoded by a writer in graphic language" (K. Goodman, 1976, p. 472). As the reader processes written language, s/he tries to create in his/her mind the thoughts that match the thoughts of the author. To do that, the reader uses his/her language ability and prior knowledge and experience to reconstruct meaning from print (C. Burke, 1976; K. Goodman, 1976).

K. Goodman (1967) calls reading a psycholinguistic guessing game because efficient reading is not a result of "precise perception and identification of all the elements, but from skill in selecting the fewest, most productive cues necessary to produce guesses which are right the first time" (p. 257). Cues fall into three categories: graphophonemic, syntactic and semantic. The reader samples from print using the three cuing systems simultaneously and makes predictions. As s/he progresses, his/her predictions are confirmed, rejected or refined.

Since reading is not a precise process, all readers make errors, or deviations from the text. The oral reading errors are called "miscues" or observed responses (as op-

posed to expected responses, the very text) in order to avoid negative implications.

> Deviations in oral reading are called miscues to suggest that they are not random errors, but, in fact, are cued by the thought and language of the reader in his encounter with the written material. The procedures used in the Reading Miscue Inventory (RMI) give teachers the opportunity to examine and evaluate the interaction between the language of the reader and the language of the author (Y. Goodman & C. Burke, 1972a, p. 5).

Oral miscues are much more than errors, for they provide "windows on the reading process." Miscues reflect what a reader is doing as s/he engages in the psycholinguistic guessing game to get to the meaning of the print. They show how effectively and efficiently the reader is using the three cuing systems during the oral reading process (K. Goodman, 1973b).

Readers show by their miscues how much they are attending to meaning. Readers who use the cuing systems proficiently produce miscues which make sense and preserve the author's meaning. They tend to correct miscues which result in meaning loss. Often they are unaware of miscues when there is no loss of meaning (K. Goodman, 1973b).

Miscues of less proficient readers show that the readers are more concerned with word-for-word accuracy than with meaning. There is a high degree of graphic correspondence between their miscues and the text, even though the miscues do not make sense. They correct miscues which do not result

in loss of meaning. They make multiple attempts at pronouncing words such as proper names, which have little effect on the meaning of the story (K. Goodman, 1973b).

The theory on which the RMI is based is that reading is an active process of getting meaning from print by using graphophonemic cues, syntactic cues and semantic cues. Teachers and researchers are able to gain insights into a reader's ability to use the cuing systems by observing his/her miscues during oral reading and analyzing them.

Qualitative Versus Quantitative Analysis

Emmett Betts (1950) is widely recognized as a primary originator of the traditional informal reading inventory (IRI) (Beldin, 1970; K. Jongsma & E. Jongsma, 1981; Pikulski, 1974). Betts introduced the IRI as a technique by which teachers may diagnose the oral and silent reading performance of students individually in order to determine his/her basal or independent level, instructional level, frustration level and capacity level. He contended that standardized tests fail to provide adequate information by which teachers can provide students with appropriate reading materials at their instructional levels.

Recording of miscues for the RMI is done similarly to the recording oral reading errors for the traditional IRI described by M. S. Johnson & Kress (1965). The examiner carefully records the exact way in which the child reads a

selection. The session is tape recorded so that the examiner can listen to it again for double checking. Using a copy of the selection, the examiner uses symbols to indicate where miscues (RMI) or errors (IRI) are made and what types, that is, repetitions, substitutions, omissions, insertions, pauses and reversals.

Scoring procedures, however, differ. For the IRI, the scores are derived quantitatively. Errors are tallied and a percentage score is computed to determine the child's performance level by dividing the tallied number of errors by the total number of words in the selection (M. S. Johnson & Kress, 1965). For the original RMI, the scores are derived qualitatively. Nine "RMI questions are asked about each miscue so that the effects of all the language cuing systems operating within the reading process can be measured" (Y. Goodman & C. Burke, 1972a, p. 49). The nine RMI questions are:

1. DIALECT. Is a dialect variation involved in the miscue?
2. INTONATION. Is a shift in intonation involved in the miscue?
3. GRAPHIC SIMILARITY. How much does the miscue look like what was expected?
4. SOUND SIMILARITY. How much does the miscue sound like what was expected?

5. GRAMMATICAL FUNCTION. Is the grammatical function of the miscue the same as the grammatical function of the word in the text?
6. CORRECTION. Is the miscue corrected?
7. GRAMMATICAL ACCEPTABILITY. Does the miscue occur in a structure which is grammatically acceptable?
8. SEMANTIC ACCEPTABILITY. Does the miscue occur in a structure which is semantically acceptable?
9. MEANING CHANGE. Does the miscue result in a change of meaning? (Y. Goodman & C. Burke, 1972a, pp. 49-50).

Each question can be answered and recorded on a profile sheet using either "Y" or a blank (= yes or no) or "Y", "P" or "N" (= high degree, some degree or no degree).

The question of whether miscues should be scored qualitatively or quantitatively has been discussed in recent literature. There is substantial agreement that qualitative analysis reveals the extent to which a child's miscues do or do not affect his/her comprehension and reveals a child's use of strategies characteristic of his/her reading process. These insights cannot be achieved through quantitative scoring (Christie & Alonso, 1980; Donald, 1980; Feeley, 1979; Y. Goodman, 1972; J. Miller, 1973; Page & Barr, 1975; Pikulski, 1974; L. Smith & C. Weaver, 1978; C. Weaver & L. Smith, 1979).

William Powell (1968) produced evidence that the word-recognition criterion designating instructional reading level (95% correct) may be incorrect. According to Powell, the 95% criterion was established by Killgallon, Betts' student, based on a study of forty-one fourth-grade students. Data collected from the IRIs of 178 middle-class, average-achieving students in grades one through six showed that first and second graders could, on the average, achieve an 85% word-recognition score while maintaining at least a 70% comprehension score. Children in grades three through six could achieve a 91% to 94% word-recognition score and still maintain a 70% comprehension score. All deviations from the text on the IRIs are marked as word-recognition errors, but often errors result, not because students do not recognize the words but because they miscue while processing language and preserving the author's meaning to varying degrees. "The number of miscues a reader makes is much less significant than the meaning of the language which results when a miscue has occurred" (Y. Goodman, 1972, p. 32).

Christie & Alonso (1980) found qualitative more than quantitative analyses useful while investigating the effects of passage difficulty on the oral reading miscue patterns of 17 first- and 17 third-grade students selected from two middle class suburban schools. The subjects read a series of increasingly difficult passages until a frustration level of

90% word recognition and /or 50% comprehension, was reached. Quantitative and qualitative analyses were performed. Comparing the type of miscues made on instructional and frustration level passages and the types of miscues made by first and third graders showed no significant differences in the quantity of miscue types. Qualitative miscue patterns, however, were affected by passage difficulty and grade level.

Subjects produced miscues with more graphic similarity on the frustration level than on the instructional level ($p < .05$). They made more miscues which retained grammatical function at frustration level passages ($p < .05$), with third graders achieving higher scores than first graders ($p < .01$, grammatical function; $p < .001$ grammatical acceptability). The subjects made fewer semantically acceptable miscues on frustration level passages ($p < .05$), with third graders making more semantically acceptable miscues than first graders ($p < .05$). They made fewer self-corrections on frustration level passages ($p < .001$). The authors concluded from the qualitative analysis that primary grade students paid less attention to meaning and more attention to graphic and syntactic cues when reading difficult material than when reading easier material and that third graders made miscues which demonstrated that they made better use of contextual clues than first graders. Quantitative analysis was unable

to reveal any differences in error type of either passage difficulty or grade level.

Dorothy Watson (1980) described a reader selected miscue (RSM) activity which a class of junior high school students did in conjunction with their daily sustained silent reading time. Students placed bookmarks at parts that caused difficulty during silent reading and continued reading. Ten minutes before the end of the reading period the students looked through the miscues they noted and selected three that caused major problems, i.e., loss of meaning or distraction from their reading. They wrote the sentences containing the selected miscues on bookmarks, underlined trouble spots, and handed them to the teacher. The teacher categorized the miscues according to similar reading problems, which provided a basis for group instruction.

Watson asserted that the RSM activity taught the students important attitudes about reading. They learned that everyone makes miscues, that readers are their own monitors determining if what is read makes sense, and that they may continue reading if they do not know a word. By selecting major meaning disrupting miscues, students attended to miscue quality instead of quantity.

> With practice, the students could easily determine those miscues that were so detrimental to the reading act that the reading flow was interrupted and meaning was distorted or slipped away, while other miscues did not cause any damage to their conversation with the

author (p. 102).

Leon Williamson & Freda Young (1974) suggested that the IRI and RMI should both be used in order to get a more precise diagnosis of reading behavior. In this study, the IRI was used to select 30 fourth, fifth and sixth graders who read at a fifth-grade instructional level. Instructional and frustration levels were defined according to IRI criteria for each student in basal and science materials. Miscues were analyzed by RMI criteria. Students made lower percentages of graphophonemically similar miscues at their instructional level than at their frustration level. They made higher percentages of miscues which were fully acceptable semantically to the whole text on their instructional level than on their frustration level. A higher percentage of miscues made at the frustration level retained grammatical function than those made at the instructional level.

The authors concluded that students process reading material differently while reading at their instructional level than while reading at their frustration level. They suggest that the IRI and RMI be synthesized for diagnostic purposes, the IRI used to identify the student's performance level, and the RMI to analyze miscues.

Joyce Hood (1978) asserts that miscue analysis by RMI criteria is a valuable tool for researchers and clinicians but too time consuming for classroom teachers for diagnosis

of all pupils. Teachers who receive training in miscue analysis, however, are apt to become sensitive to the strengths and weaknesses of students revealed by miscue quality and provide appropriate feedback to students as they read aloud (E. Jongsma, 1978). Miscue analysis has been modified in different ways for classroom use to make it less involved and less time consuming for teachers, while they still obtain an in-depth diagnosis of student reading behaviors (Griffin & K. Jongsma, 1980; Siegel, 1979).

Questions have been raised over the reliability of scores among judges who evaluate the miscues (Groff, 1980; Singer, 1978). Y. Goodman (1971) found that two judges showed initial agreement on 90% of the miscues coded. For the small percentage that three judges could not agree upon, a fourth judge was asked to help reach a consensus. In a formal study of inter-judge reliability (Hood, 1975-76), recommendations were made to increase the reliability of miscue scores. Recordings of oral readings from 50 second graders in a Midwestern city were scored by five college graduates. Five of the 50 recordings were used for training the judges. The remaining 45 were divided into five groups of nine and each group was scored by each judge.

The reliabilities for the mean scores of total miscues and miscues resulting in meaning loss were .99 over all five judges. Hood concluded that there would be no notable in-

crease in reliabilities if more than two judges were used. The five judges showed substantial agreement over proportions of graphically similar miscues and self-corrected miscues (.97 to .99). Reliabilities of contextual appropriateness scores ranged from .84 to .94. Hood suggested that the lower reliabilities could be due to the low proportions of miscues in some categories of contextual appropriateness and recommended that the number of judges used for evaluating contextual appropriateness should depend on the purpose of the evaluation. Two judges should be sufficient if the data reflect only meaning loss, but perhaps more than two judges should be used if differences in proportions of miscues at various levels of contextual appropriateness are studied.

Miscue analysis, therefore, provides valuable information for researchers, clinicians and teachers which quantitative scores can not give. Steps should be taken to insure the reliability of miscue scores.

Research into the Reading Process

The analysis of miscues based on the RMI procedures has been used in reading research to study the psycholinguistic theory of the reading process. The following studies are arranged and discussed in five categories: (1) the effect of the reader's language development on reading strategies; (2) the strategies of beginning readers; (3) comparisons of the strategies of strong and weak readers; (4) comparisons

of the strategies of readers at different age levels; and (5) the effect of miscue strategies on reading comprehension.

Language Development and the Reading Process

Researchers using miscue analysis were able to provide substantial evidence that the reading process, more than precise sequential word calling, involves language interaction. Studies compared students' oral reading of words in context and in isolation, studied the effects of syntactic structures on readers' strategies, and studied the effects of readers' dialect on comprehension.

Words in context and in isolation. In order to demonstrate support for his theory, K. Goodman (1965a) studied the reading behavior of 100 first-, second- and third-grade children from an industrial suburb of Detroit. Each child was given a word list from which his/her word calling behaviors were recorded and a story on which this word list was based. His/her reading behavior in these exercises was noted according to the RMI procedures. As expected, the children could read many words in stories that they could not identify in word lists. A total of 69% of the first graders identified two-thirds or more of the words in stories that they had not recognized on lists; 66% of the second graders knew three-fourths or more in stories; and 67% of the third graders could read more than four-fifths of their list errors when those same words were placed in stories. None

of the children identified a list word correctly and missed it consistently in a story. Three possible reasons for frequent one-time substitutions are given: (1) the overuse of graphophonemic cues to the exclusion of other cues; (2) the book language differing from the child's understanding of language use; and (3) the ineffective use of syntactic and semantic cues.

Nearly every repetition that the children made while reading the stories was for the purpose of correcting previous reading. Repetitions or regressions were not considered as errors but as attempts to correct errors and were, therefore, vital in learning to read. If errors went uncorrected, it was because (1) the error did not change the meaning of the passage, and (2) the reader was paying too much attention to graphophonemic cues and had lost the meaning of the passage.

Goodman concluded that since it is harder for children to identify words in isolation than it is to read them in stories, teaching should focus on whole language, instead of on introducing and analyzing isolated words. He also concluded that regressions are a child's means of self-correction as cued by language knowledge and should not be discouraged.

MacMullin (1980) extended the K. Goodman (1965a) study by testing for a significant difference in the ability of 80

rural, low and middle socioeconomic level second graders to read words in isolation and the same words in context, and by examining the relationship between their substitution miscues and their reading comprehension. The students recognized significantly ($p < .0005$) more words in context than in isolation, thereby confirming Goodman's (1965a) findings. The graphic similarity score was significantly higher ($p < .0005$) for substitutions occurring in isolation than those occurring in context, indicating that graphic cues are used much more for recognizing words in isolation than recognizing words in context.

Unexpectedly, neither semantically nor syntactically acceptable substitutions correlated significantly with reading comprehension scores. A possible explanation might be found in that questions were constructed by the examiner and used as a measure of comprehension rather than the usual RMI retelling method of obtaining a comprehension score. A total of 67% of the substitutions in context were syntactically acceptable and about 33% were also semantically acceptable, which indicated that language use is basic to the reading process and that children rely more heavily on the syntax of their language than on meaning while reading.

MacMullin's conclusion that the oral language of children is a most important base for reading instruction coincides with K. Goodman's (1965a). Children should be provid-

ed with reading materials in which the syntactic structures resemble their oral language. In addition, since comprehension is the most important goal in reading and over half of the syntactically acceptable substitutions changed meaning, reading instruction must direct students toward developing an attitude that meaning must be sought and obtained from everything they read.

Syntactic structure. Kenneth Goodman and Carolyn Burke (1968) found support for several aspects of the psycholinguistic theory in their study, but of particular importance was their demonstration of the extent to which syntactic information is used by readers. Eight fourth graders and four fifth graders were selected for the study by their teachers because the students did a great deal of silent pleasure reading. The students read orally the same story from a sixth-grade basal reader, using RMI procedures. A total of 83% of the miscues resulted in totally syntactically acceptable structures. A total of 11% of the miscues were syntactically acceptable with the prior portion of the sentence and 1% with the following portion of the sentence. A total of 61% were semantically acceptable within the passage. Only 15% of the miscues were totally unacceptable semantically. The authors concluded that the students were reading for meaning and that all miscues do not necessarily result in meaning loss. Comparing the amount of semantically accept-

able miscues to the amount that are syntactically acceptable indicates that syntactic clues more than semantic clues are basic in the reading process. P. David Allen (1970) arrived at the same conclusions in his study of 15 second, fourth and sixth graders (five subjects at each level). Over 70% of all miscues had full syntactic acceptability. Only 10% of the second graders' miscues, 21% of the fourth graders' and 15% of the sixth graders' miscues showed no amount of semantic acceptability.

In their next study, K. Goodman and C. Burke (1968) divided the miscues of 18 proficient readers--six each from grades two, three and four--into those that resulted in a change in syntactic structure (their "re-transformation miscues") from those which did not ("non-transformation miscues"). Of the 1,742 total miscues, 1,061 were categorized as involving re-transformations and were further categorized according to how they changed the deep and surface level structure of the text. The first category involved miscues which showed a difference in the reader's deep structure from the author's. Miscues in this category fell into a wide range from inconsequential to serious. Possible reasons given for a reader's misinterpretation of deep structure were: (1) the syntax is too complex for the reader to handle; (2) the syntax and/or meaning of the passage is ambiguous; or (3) the author's meaning is too complex for the

reader to handle.

The second category included miscues that preserved deep structure but used different transformational rules to attain surface structure, that is, differences in idiolect and dialect between reader and author. Readers tended to retain their own dialect while successfully accommodating to the author's syntactic structure and maintaining meaning.

There was a third category into which re-transformational miscues could be classified. The miscues in this category retained the author's deep structure by using an optional surface level structure. Miscues in this category seldom change passage meaning.

The authors concluded that transformational analysis is a useful way to examine the reading process. The first category of re-transformational miscues has the best potential for uncovering serious difficulty because it indicates a discrepancy between the author's meaning and the meaning obtained by the reader. Reading involves a complex psycholinguistic process, not merely matching letters and sounds or calling words.

Joanne Nurss (1969) studied the relationship between miscues made by 144 suburban Connecticut second graders and the syntactic complexity of the passage they read. One hundred eight (Sample A) were screened on a sight vocabulary list and scored at least 90%. Thirty-six (Sample B) were

not screened. The students read six one-sentence stories aloud. The sentences represented three levels of syntactic complexity (high, mid and low). Both groups made significantly more ($p < .05$) miscues when reading more complex sentences. Nurss found that uncorrected miscues were both syntactically and semantically acceptable more frequently in sentences of low syntactic complexity than those of high complexity (Sample A, 52% for low depth, 48% for high depth; Sample B, 22% for low depth, 10% for high depth). She concluded that a relationship exists between the number and quality of miscues children are likely to make and the syntactic complexity of the sentences they are reading and that miscue analysis is a good way to assess children's syntactic and semantic understanding of their reading material.

James Christie (1978) investigated the effect that unfamiliar syntactic structures had on 20 seven-and eight-year-olds who were randomly selected from a suburban southern California school. Two 240-word passages were constructed and equated except for syntactic structures. Passage A had syntactic structures frequently used by young children but Passage B consisted primarily of syntactic structures found in the oral language of older children. The children's oral reading miscues for both passages were analyzed, using a modified version of the RMI. Miscues were classified as either acceptable or detrimental (syntactically and/or semantically

unacceptable). The children produced significantly more miscues and a higher percentage of detrimental miscues on Passage B ($p < .01$). Christie concluded that the unfamiliar syntactic structures hindered the children's ability to predict and caused them to make more errors, thereby supporting Goodman's theory of the reading process. It is important that children are provided with reading materials which are composed of syntax matching the syntax of their oral language.

Donald Leu, Jr. (1982), investigated the possibility that the oral language experiences of beginning readers may be inadequate preparation for processing syntactic patterns found less frequently in written discourse. Two stories were written in two versions (with and without language structures found more often in written discourse than oral discourse) and organized into a design allowing subjects (28 second graders randomly selected from one school district) to read both stories and both language versions without reading the same story twice. Miscues from stories with written language structures were qualitatively analyzed to identify locations where subjects rearranged syntax. A high portion of syntax miscues resulted in less complex structures and in structures more likely to be found in oral discourse. The frequency of miscues that resulted in structures more likely found in oral discourse increased with the

decrease in written feature production scores, i.e., a measure of familiarity with written structures formerly calculated for each subject ($p < .05$). The indication is, according to Leu, that the less familiar children are with written language structures the more they produce miscues that reflect oral discourse structures.

Sara Rode (1974-1975) explored the effects of syntactic structure on eye-voice span (EVS) using third, fourth and fifth graders (18 from each level) of average reading ability from a suburban public school in Cleveland, Ohio. A device was designed so that the students could see to read sentences on cards only when a light was turned on. Sentences were constructed to measure ability to process syntactic units. Each contained two five-word clauses. The subject was asked to read aloud while the light was on and then report all the words beyond the one s/he was saying at the moment the light went out. Three scores were derived. The eye-voice span (EVS) score was the number of words reported correctly after the light went out. The corrected scoring (CS) equaled the EVS score plus syntactically and semantically acceptable miscues. The syntactic analysis score was derived by figuring the number of times the student's EVS terminated at the end of noun phrases or verb phrases.

The results showed that EVS increased with age level

and was influenced by syntactic structure. EVS was significantly higher ($p < .001$) for noun phrases than verb phrases across all levels. The syntactic analysis of EVS scores showed that all levels terminated at a syntactic boundary to a significant degree ($p < .05$) and the number of times students read to a verb phrase more frequently than a noun phrase boundary was also significant ($p < .001$). The third graders completed more phrase units than the older groups ($p < .05$) but the older groups completed more entire clauses ($p < .01$). A total of 62% of the miscues were judged to be syntactically and semantically correct. A syntactic analysis of CS revealed that each grade level read completed clauses at a similar magnitude of increase, with the older two groups completing clauses significantly more often than the younger group ($p < .01$).

The author concluded: (1) EVS is influenced by age; (2) readers of all ages are influenced by syntactic unit type; (3) EVS terminates at verb phrases more often than noun phrases; (4) the unit of decoding for older readers is a clause; and (5) readers attempt to complete syntactic units even when they are unable to identify exact words in the text. Even young readers use previously acquired language knowledge to aid them in the reading process.

By using miscue analysis, therefore, it has been demonstrated that readers expect and use familiar syntactic

structures while reading and miscues vary in the seriousness of degree to which they deviate from authors' structures. Unfamiliar structures and complex structures are more difficult for readers to reconstruct.

Other text variables. Joyce Hood (1982) designed a study "to analyze the relationships between miscue scores and accuracy levels separately from the influence of text characteristics and of habitual subject strategies on miscue scores" (p. 143). Fifty-two second graders read two stories that were rated on readability, familiarity of vocabulary, and redundancy of information. Story A was rated lower in readability (second grade versus third grade level), less likely to present unfamiliar vocabulary, and greater in redundancy of information than Story B. The subjects were divided into four accuracy groups based on the total miscues made while reading each story.

Syntactic and semantic acceptability of miscues was associated with both reader accuracy and text characteristics. At high accuracy levels proportionately more miscues were contextually acceptable to the story and fewer were not contextually acceptable than when accuracy was low. Subjects who used efficient strategies while reading Story A were unable to perform at the same level of proficiency on Story B.

Proportion of miscue corrections appeared to be associated more with text characteristics than reader accuracy.

All groups corrected proportionately more miscues on Story A than on Story B. Hood cautioned teachers and researchers that text variables can affect miscue patterns and against interpreting those patterns as habitual reader strategies.

Dialect. Kenneth Goodman (1965b) hypothesized that there is a direct relationship between the degree of mismatch from the learner's dialect and the writer's dialect and reading success. He changed his hypothesis after several years of miscue research to: "The only special disadvantage which speakers of low-status dialects suffer in learning to read is one imposed by teachers and schools" (K. Goodman & Buck, 1973, pp. 6,7). He and Carolyn Burke (1968, 1969, 1973) in their studies (cf. above, pp. 26-27 and below, p. 57) observed the effects of dialect on the reading processes of urban Detroit black-English speaking children in grades two through ten. They found that speakers of black dialect develop an ability to acquire receptive control over higher status dialect which they hear from others in their community and from television and radio. Dialect-based miscues involved the reader's adjusting surface structure of the text to fit his own dialect. The most common dialect-based miscue was changing inflectional endings. Other miscues involved irregular verbal forms, especially "to be" forms. Less frequently, miscues involved transformations of grammar and substitutions of preferred terms. They found

that dialect-based miscues did not interfere with obtaining meaning from print or the reading process. The authors asserted that teachers who correct dialect-based miscues interfere with the student's use of linguistic strategies to get meaning from the text. Meaning, not word accuracy, is the goal of reading.

Rudine Sims (1972) examined the oral reading of ten second graders who were black-English dialect speakers from urban Detroit. Each subject read a story written in black dialect and one written in standard English. Two groups were formed to counterbalance the two stories written in both dialects. Between 25% and 50% of their miscues were syntactically and semantically acceptable, which is common for their developmental level because they had not yet learned to use contextual constraints effectively. The subjects tended not to correct miscues, even when syntactically and semantically unacceptable. Dialect-based miscues involved changes from standard English to black dialect and black dialect to standard English, but did not cause change in deep structure. The author concluded that it is not efficacious to develop reading materials in black dialect for instructing readers who are speakers of black dialect.

Patricia Rigg (1975) compared the oral reading and speaking dialects of four black-English speakers from urban Detroit, four black-English speakers from Port Gibson, Mis-

sissippi, and one white Southern English speaker from Port Gibson. All were sixth-grade students. Nine subjects read a story orally and were interviewed about the story. The Northern and Southern black groups produced similar amounts and types of black-English features in their oral reading miscues, but there was a tendency for the Southern group to produce a larger amount than the Northern group during the interview. Both black groups tended to display a larger number of black-English features during oral reading than during the interview. There was an unquestionable difference between the black Southerners' dialect and that of the white Southerner. There were varying degrees of reading proficiency among the subjects, but there was no relationship between proficiency and dialect.

The author concluded that because speakers of black dialect were able to produce 20% black-English features and 80% standard English features, on average, during their oral reading and interviews, no reading instruction time should be spent teaching standard English features to speakers of black English. Teachers should instead focus attention on helping students learn strategies for improving reading proficiency.

Thomas Bean (1978) analyzed and compared the oral reading strategies of 20 average and 30 below average readers who were Hawaiian Islands dialect (HID) speakers in fourth,

fifth and sixth grades. Each subject read a story measured to have readability at his/her own grade level. Miscues were analyzed and examined for degree of dialect-based influence. Dialect-based miscues did not disrupt meaning and were mainly phonological. The subjects were not consistent in making dialect miscues; that is, they would pronounce a word according to their own dialect in one sentence and according to standard English in the next. They produced more HID features during oral retellings than during oral readings. While reading, they tended to adhere closely to the author's writing but made inconsistent, occasional phonological dialect-based miscues.

Average readers produced a higher percentage of HID miscues in all three grade levels than did below average readers. The sixth-grade group produced a higher percentage of HID miscues than either of the younger grade levels. The author concluded that instruction in standard English pronunciation in oral reading would not help HID speakers to become better readers.

Lowell Eberwein (1982) studied the influence that black dialect-based miscues have on comprehension. He, using information obtained from a third-grade class, rewrote a basal reader passage "to neutralize the effects of dialect interference" (p. 256). Difficult parts of the story were identified by student miscues. Then students paraphrased each

sentence according to their own language. Two other third-grade classes (48 students) who read the revised story and original story in a pilot investigation made better quantitative miscue scores on the revised story ($p < .001$).

Twenty low achieving, black dialect speaking third graders were selected for the second investigation. Students were randomly assigned to read either the revised or original story, ten subjects for each. Subjects' miscues and retellings were analyzed. Higher percentages of total miscues ($p < .007$), lower percentages of no meaning loss miscues ($p < .01$), and higher percentages of dialect-based miscues ($p < .004$) were made on the original story than the revised story. No significant differences were found in the retelling scores. Eberwein concluded that dialect based miscues do not significantly influence comprehension of reading materials.

Miscue analysis has shown, therefore, that readers use their own knowledge of language while reading, especially their knowledge of syntax. The dialect of readers does not disrupt the reading process or hinder comprehension. Additionally, miscue studies examined the strategies of readers at various levels of English language proficiency (Ellis, 1980; Rodriguez-Brown & Yirchott, 1980; Romantowski, 1973) and the language cuing systems used by adult readers (De Santi, 1979; Raisner, 1978).

Beginning Readers

Researchers have used qualitative analysis of oral reading miscues for the purpose of investigating the reading processes of beginning readers. Yetta Goodman's (1968) study provides a basic description of beginning readers. Marie Clay (1968, 1969) provided information on the reading processes of beginners as their reading ability develops in first grade. Rose-Marie Weber (1970) and Andrew Biemiller (1970) explored how beginning readers use graphic and contextual information. Elizabeth Burke (1976) and Anne Schlieper (1977) traced the development of beginning readers over three years.

On the basis of an in-depth miscue analysis conducted on six beginning readers, Yetta Goodman (1968) provided a psycholinguistic description of the reading behavior of these children. The conclusions were not generalizable to all beginning readers or any other group of beginning readers because of the small sample size. The value, however, of the conclusions described in this study is that they provide hypotheses for further research:

1. Beginning readers produce miscues as they read and they correct a substantial number of them by regressing.
2. Beginning readers are able to gain adequate comprehension if they do not exceed fourteen miscues per hundred words.

3. As the reading ability of beginning readers develops, the quality of their miscues change.

4. The miscues of beginning readers are cued by their own language background and experience and the language of the text.

5. Miscues of beginning readers tend to retain the grammatical function of the text.

6. Understanding of syntax has a greater influence on the development of beginning readers' proficiency than semantic understandings.

7. As the reading ability of beginning readers develops, they make better use of syntactic and semantic information.

8. Dialects of beginning readers do not affect their proficiency or comprehension.

9. Basal reading series for beginning readers do not consistently increase in difficulty with successive books.

Marie Clay (1968, 1969), in her studies of the substitution miscues and self-correction of miscues, yielded information on the reading processes of beginning readers as their ability develops. One hundred children, a stratified-random sample of five-year-olds from the urban area of Auckland, New Zealand, were observed weekly until their sixth birthdays; they read orally from their current reading books.

Children showed variability in their reading development. At the end of the year, they were given a word recognition test and divided into four progress groups, high (H), high middle (HM), low middle (LM) and low (L).

A linguistic analysis of the substitutions revealed 72% were grammatically acceptable. Some substitutions classified as unacceptable in this analysis would have been treated as acceptable in a transformational analysis and would have made the percentage higher. A total of 43% of the substitutions were similar to the text graphophonemically. Results were consistent across the four progress groups.

A total of 26% of all the miscues were self-corrected. L group corrected 11% of their miscues, LM 14%, HM 28% and H 35%, a significant difference at the .01 level of each higher group from each lower group.

Clay believes that these findings indicate that when young beginning readers guess at words they do not easily recognize, they use their knowledge of syntax to a great degree. Correction occurs with an awareness that something is wrong, and not all the relationships between words fit neatly. The child then spontaneously regresses in order to resolve the dissonance. The correcting process is more difficult for children who have poor control of language. They have difficulty in predicting and remembering structures, and noticing redundant cues which signal they have miscued.

Rose-Marie Weber (1970) and Andrew Biemiller (1970) investigated the beginning readers' use of graphic and contextual information in reading by qualitatively analyzing their oral reading miscues. Miscues were recorded daily of 21 first graders from an Ithaca, New York, school during the last six months of the school year (Weber, 1970). On the basis of class work through the year and the reading subtest of the Metropolitan Achievement Test at year's end, the sample was divided into a faster-moving group of twelve children and a slower-moving group of nine children. This study described only the miscues made on the children's current reading book. The rate of miscues per hundred words was 3.9 for the high group and 6.7 for the low group. Nearly 80% of the miscues for both groups were classified as substitutions. Graphic similarity scores of substitutions indicated that the high group's responses more closely resembled the text than the low group's. Fifteen percent of the high group's and 21% of the low group's substitutions shared no graphic similarity with the text. The high group's mean graphic similarity score (407.87 out of 503 substitutions) was over a hundred points higher than the low group's (269.47 out of 353 substitutions). The data clearly showed that beginning letters of words were the most important graphic cue for the children. Fifty-three percent of the substitution miscues had the same first letter as the writ-

ten word and 29% had the same first two letters. The mean graphic similarity scores improved during the year from 303.46 out of 418 substitutions to 395.97 out of 438 for the entire group.

Ninety-one percent and 63.7% of the miscues were grammatically acceptable to the preceding context and the entire sentence respectively, with negligible difference between the high and low groups. This is strong evidence that the strong and weak beginning readers do not read word by word but bring their knowledge of grammar to the reading process. Scores for grammatical acceptability decreased slightly for both groups during the year, from 93.5% to 88.5%. Weber asserted that at this period of reading development, their greater skill of graphic cue use may hinder their syntactic cue use.

In another study, miscues of first graders attending two Ithaca, New York, schools were recorded once a week from October to May (Biemiller, 1970). One class of 24 children came from a middle suburban area, the other class with 20 children from a poverty-stricken rural area.

Proportions of contextually acceptable miscues and graphically similar substitutions were tabulated from all response miscues. Analyses were made based on the non-response (NR) phase, the time determined for each child during which s/he made predominantly non-response miscues. The

pre-NR phase and post-NR phase identified the periods preceding and following the NR phase. The NR phase was said to have begun the month when 50% or more of the child's miscues were non-responses and ended after two consecutive months when less than 50% of the child's miscues were non-responses.

Results of data analysis according to phases showed that the percentage of all contextually acceptable miscues was not significantly different from the pre-NR phase to the NR phase but increased significantly from the NR phase to the post-NR phase ($p < .05$). However, the percentage of contextually acceptable substitutions declined significantly between the pre-NR and NR phases and increased significantly during the post-NR phase ($p < .01$). Graphically similar substitutions increased significantly through all three phases at the .05 level. Biemiller contends that the NR phase "reflects a change in strategy on the part of the child towards increasing his use of graphic information to identify words" (p. 87).

Close to 30% of the graphically similar substitutions were also contextually acceptable in the pre-NR and NR phases, while over 70% of the graphically similar substitutions were also contextually acceptable at the post-NR phase (a significant difference at the .005 level). These results seem to indicate that the NR phase is characterized by a shift away from using contextual constraints toward more use of graphic cues, but the post-NR phase is characterized by an increase in

the child's ability to use both contextual and graphic cues simultaneously to identify words.

Biemiller concluded that mastery of graphic information is a child's first task in learning to read. The sooner that first graders reach the NR phase of dealing with graphic information, the sooner they can get on with the post-NR phase where they can use both contextual and graphic information while reading. The author also pointed out the value that qualitative analysis of miscues can have for diagnosing whether students are making effective use of contextual and graphic information.

Elizabeth Burke (1976) compared the decoding strategies of six children (three boys and three girls) from each of the ages seven, eight and nine, who were selected from twelve county schools, each diverse in sociceconomic levels. Four of the schools were classified as traditional, four as semi-formal and four as informal. Each student read a story at a difficulty level appropriate to his/her age from Neale's Analysis of Reading Ability.

Qualitative analysis of miscues revealed no significant differences in the strategies of boys and girls or in the strategies of children from differing school types. The study did provide insight into the developmental processes of learning to read. The semantic acceptability scores increased significantly with each year of age ($p < .01$). The

syntactic acceptability scores also increased each year but differences were not significant statistically. Graphic proximity scores showed a significant U-shaped trend ($p < .05$) which ended with almost no increase from age seven to age nine. The eight-year-olds had the lowest graphic proximity scores. The lowest graphic scores occurred at the same time children were learning to increase contextual strategies. The study provided strong evidence that meaning becomes increasingly more important in the reading process as age increases.

Anne Schlieper (1977) compared the grammatically acceptable miscue rates of 71 first, 94 second and 72 third graders in order to trace development in young readers. The subjects were from three underprivileged innercity school districts in Montreal. All three schools used similar eclectic reading programs.

The subjects read the first four paragraphs of the Oral Reading Test of the Gates-McKillop Reading Diagnostic Tests. Qualitative miscue analysis revealed a sharp increase in grammatically acceptable miscues from grade one to grade two and especially between grades two and three. Similar findings resulted when only the miscues of those students (14 in first, 13 in second and 8 in third grades) who achieved grade scores of 2.6 to 3.0 were figured.

Schlieper concluded that readers progress in meaning-

and language-based strategies as they progress through the first years of school. Children, regardless of ability, deal with reading as language and expect it to make sense more and more with age.

Yetta Goodman's (1968) hypotheses (see pp. 39, 40 of this chapter) are generally supported by miscue research, but two studies could be construed as evidence against one of her hypotheses. Each study supports her first hypothesis that beginning readers miscue and self-correct as they read. Clay (1968, 1969) provides evidence that the self-corrections are an indication that beginning readers use their own knowledge of language and understanding of syntax to a great degree while reading (hypotheses 4 and 6). Investigations support hypothesis 3, that miscue quality changes as beginning readers develop (Biemiller, 1970; E. Burke, 1976; Schlieper, 1977; Weber, 1970). Weber's (1970) and Biemiller's (1970) studies, however, seem to discredit hypothesis 7 which states that as beginning readers develop in ability, they make better use of syntactic and semantic information. The first graders in both studies went through a phase in their development in which their miscues showed a less efficient use of contextual clues as they were making more use of graphic clues. The Biemiller study, however, also gives some support for the hypothesis in that after the first graders passed that phase, they made significantly better use of all three cueing sys-

tems, using them simultaneously. E. Burke (1976) and Schlieper (1977) provided further support for Goodman's hypothesis 7.

Varying Reading Abilities

Several qualitative miscue analysis studies have explored the reading strategies of students having certain reading abilities. These studies include investigations into the strategies of students classified as disabled readers and the comparison of strategies from students classified as high, average and low readers.

Students classified as disabled readers. Susanna Pflaum and Tanis Bryan (1980, also Pflaum, 1978) used qualitative analysis of miscues to compare the reading strategies of 22 disabled readers and 29 normal readers, whose ages ranged from 8.6 to 12.4, from a poor innercity school district (District A) and 14 disabled and 14 normal readers, whose ages ranged from 7.6 to 12.3, from an affluent suburban area (District B). Each student read a version of a story which had been rewritten into eight levels of readability in order to control for miscue rate. A three step method was used involving word lists generated from each version in order to determine which version was at the appropriate level for each student.

Despite a three-step procedure designed to control for miscue rate, the disabled students had a tendency to make

more miscues than the normal students (D,$\bar{X}$ = 15.339, sd = 5.452; N,$\bar{X}$ = 8.795, sd = 3.876). The disabled groups made higher proportions of meaning change miscues than did the normal groups ($p < .01$). District A children had higher proportions of meaning change miscues than District B children but not to a significant extent ($p < .069$). The proportion of self-corrections made by the disabled group was not significantly different from the normal group; however, there was a significant difference between the two groups when self-correction of meaning change miscues were considered. The disabled group self-corrected less efficiently ($p < .01$).

Children in the two districts differed significantly in self-correction behavior only in that District B students made a larger number of multiple attempts ($p < .05$). Children from both districts and groups used phonic cues equally.

The authors concluded that the disabled readers are poorer users of context than the normal readers. They suggested that disabled readers would profit from instruction in using context clues, such as lessons in whether miscues have changed the meaning of the text or not. They concluded that disabled readers would not benefit from further instruction in phonics.

Michael Kibby (1979) hypothesized that the difficulty of a passage would have a significant effect on the strategies of disabled readers. Subjects were 46 fourth, fifth, sixth

and seventh graders from middle-class families, diagnosed as disabled readers with average intelligence. Each read two paragraphs, one called the difficult passage (grade level 4.5) and the other the less difficult passage (grade level 3.8). Qualitative miscue analysis of each student's reading of both passages allowed for the classification according to RMI procedures of miscues as strength, partial strength or weakness in the use of contextual cues.

A total of 76% of the students were classified as weak in contextual cue use on the difficult and 2% on the less difficult passage. Only a small percentage of students (4%) were classified as strong in contextual cue use on the difficult passage, but 74% had demonstrated their strength in using contextual cues on the less difficult passage. Analysis of readings from the difficult passage alone would seem to indicate that most of the students do not realize that reading is supposed to be meaningful, but the findings of the study indicate that nearly three-fourths of these students do recognize the purpose of reading.

Kibby concluded that reading strategies of disabled readers interact with the difficulty of the reading material. If diagnosis reveals that a reader has adequate use of contextual strategies with less difficult materials, Kibby suggests that the reader should be taught skills, sight words or content which will help him/her apply his/her contextual

skills to more difficult materials.

Janet Kendall and Joyce Hood (1979) used quantitative and qualitative analyses of miscues from two types of disabled readers to examine the relationships between comprehension and word recognition. Thirty-nine fifth graders from four schools in a medium-sized Midwestern city which could be classified as either Low Comprehension-High Word Recognition subjects (Lo C - Hi WR, 13 subjects) or High Comprehension - Low Word Recognition subjects (Hi C - Lo WR, 12 subjects) made up the samples. Each subject read a story of grade three readability and one of grade five readability and were then asked ten literal questions about each story.

Statistical tests could not be appropriately performed on the scores, but the authors believed that the results provided insights into the relationships between comprehension and word recognition. They found no interactions between the types of disabled readers and story difficulty. Use of graphic cues, proportions of self-corrections and correct answers to comprehension questions were about the same for both groups. The Lo C - Hi WR group made nearly half as many miscues as the Hi C - Lo WR group, but a larger proportion of the miscues from the Lo C - Hi WR group were contextually inappropriate, indicating that the Hi C - Lo WR group demonstrated a greater sensitivity to contextual information which appeared to result in their ability to answer as many compre-

hension questions accurately as the Lo C - Hi WR group, even through they made nearly twice as many miscues as that group.

Gayle Fay, Eric Trupin and Brenda Townes (1981) investigated the reading and cognitive strategies of 33 young students identified by their schools as reading disabled and referred to a clinic at the University of Washington. Their ages ranged from 7.1 to 8.9 years and their IQs from 92 to 116. Subjects were classified into groups of high, medium and low on the basis of their performance on the Wide Range Achievement Test and the Spache Diagnostic Reading Scale. Oral miscues were analyzed according to RMI procedures.

High, medium and low readers showed significant differences in usage of all cuing strategies except the use of graphic relationships and all used graphic information more efficiently than any other strategy. The efficiency of phonic use increased as reading ability increased. Miscues of medium and high readers showed significantly more use of phonic information ($p < .05$) than did miscues of low readers.

There were significant differences among the groups in their use of syntactic cues ($p < .001$). Six percent of the low's miscues, 19% of the medium's and 43% of the high's were classified as indicating strength in use of syntax. Classified as weakness in use of syntax were 84% of the low's miscues, 53% of the medium's and 31% of the high's.

Efficiency in using semantic cues was also significantly

different among the three groups. The medium group's miscues showed significantly less loss of meaning (74%) than the low's (93%) and significantly more loss of meaning than the high's (39%; $p < .001$).

Fay, Trupin and Townes suggested that the differing of the reading groups in proficiency could possibly be due to a hierarchy related to cognitive loading. The lows tended to focus entirely on the most conspicuous details of words. The medium group tended to focus on one cuing system at a time. The highs seemed to be able to use at least two cuing systems simultaneously. The authors further asserted that the ability to frequently use more than one cuing system at a time required a sophisticated level of conceptual thinking and the results of this study indicated that cognitive development may be central in disabled readers' skill development. They suggested that remedial programs be designed to meet wide ranging needs of students exhibiting delays in reading development.

Miscue analysis showed that disabled readers use graphic information more efficiently than contextual information. They could use graphic cues as well as normal readers could. Kibby (1979) cautioned, however, against using passages which may be too difficult in order to determine a disabled reader's use of context cues. Kendall and Hood (1979) affirmed that qualitative and not just quantitative analysis must be

considered when interpreting miscues. Remedial instruction must not be limited to reading subskill behaviors but must enhance development in all areas.

Students classified as high, medium and low readers. Yetta Goodman (1971) made a longitudinal study of the miscues of four black children from a wide range of socioeconomic backgrounds. Two were identified as average readers and two as slow readers by their teacher. The in-depth study procedures made it necessary to use a small sample size.

Each child's oral reading was taped regularly during his/her second and third years of reading instruction. Trends were reported but sample size limited generalization. Slower readers made more miscues than average readers. Quantitative miscue analysis alone did not show developmental reading proficiency. Qualitative analysis revealed that all readers used grapho-phonemic, syntactic and semantic cues and tended to self-correct miscues which resulted in unacceptable structures, but average readers used the strategies more efficiently than slow readers and were able to more easily use all the language cue systems simultaneously and to stress one strategy over the others. The slow readers went through a stage where they let semantically acceptable miscues stand uncorrected. The developmental pattern that emerged was that at first subjects omitted words they did not know and then produced non-words by trying to sound out words they did

not know. Often this strategy helped the reader identify the correct word. The students' retelling often showed that they understood the author's meaning whether they produced non-words or not.

Self-correction strategies revealed developmental trends in slow and young readers. The percent of correction strategies increased but then seemed to stabilize. Y. Goodman suggested that teachers allow students to read unaided so that they can fully develop the use of their own correction strategies.

Y. Goodman arrived at the following hypotheses on the basis of this study:

1. Average readers tend to have fewer miscues per hundred words and a more narrow range of miscues per hundred words than slow readers.
2. Average readers' miscues show closer proximity to the expected response in terms of graphic and phonemic similarity than slow readers.
3. Slower readers' miscues show finer graphic and phonemic discrimination from session to session.
4. Average readers' graphic and phonemic proximity miscues tend to stabilize and do not continue to increase.
5. Average readers have a higher percent of miscues which produce syntactically acceptable structures

than the slow readers.

6. Average readers tend to correct more than slow readers.

7. Slow readers' use of correction increases over a period of a year.

8. Slow readers' miscues produce increasingly more syntactically and semantically acceptable structures than unacceptable (pp. 78,79).

Dorothy Menosky (1972) examined the miscues of 18 average readers, three each from grades two, four, six and eight, plus three low and three high readers from grade four. Each subject read material which was divided into three equal sections with a further division between the first one or two pages (approximately 200 words) and the first section. Miscue quality was viewed over the varying portions of the material.

All groups produced a higher percentage of syntactically and semantically unacceptable miscues in the first and shortest division of the material. This portion of the material provided enough syntactic and semantic information for processing by the high students and the average students of all levels. The low readers, however, produced a high percentage of contextually unacceptable miscues which decreased as they progressed through the material. All the average students of all levels controlled syntactic structure more strongly than

meaning, especially at the second-grade level. Students from the more advanced levels were better able to supply semantically acceptable as well as syntactically acceptable structures. All the groups relied on preceding material and the anticipation of coming material while processing cues.

K. Goodman and C. Burke (1973) examined the reading processes of 94 students in grades two, four, six, eight and ten, with proficiency levels of high, average and low in each grade. The second- and tenth-grade average groups were further subdivided into low-average and high-average groups. There were five or six students in each group. All students were from urban schools in Detroit and Highland Park, Michigan.

The students read two stories, the same stories read by all members in the same group. Stories were selected for each group because researchers believed they were a somewhat difficult task for that group. Additionally, for further comparison, several groups read the same stories.

Substitutions were the most common miscue type at all levels of grade and proficiency. Quality, however, differed in effectiveness and efficiency according to the proficiency of the reader, the more proficient readers making more acceptable substitutions. The more proficient readers of all grade levels made lower percentages of substitutions and higher percentages of omissions and insertions than did the

readers of lower abilities. Qualitatively, however, a larger number of the higher readers' omissions and insertions involved minor transformations but those of the lower readers often left unacceptable structures.

There were no notable differences among the various levels of proficiency with regards to using graphic cues. The more proficient readers showed a tendency of producing miscues which were syntactically acceptable. Less proficient readers produced higher percentages of partially and fully unacceptable syntactic miscues. The most consistent difference between the proficiency groups was the numbers of semantically acceptable miscues. Percentages of miscues which were semantically unacceptable clearly decreased as proficiency increased. There was also a tendency for readers to make fewer semantically unacceptable miscues as grade levels progressed.

The analysis showed greater variations in the processes of readers at differing levels of proficiency than at differing levels of development. K. Goodman and C. Burke (1973) observe:

> The primary reason for this seems to be that higher readers of every grade, with the possible exception of the second grade, do a better job of predicting structure and meaning on the basis of selected cues. Low readers are less able to retain in memory long units of syntactic and semantic cues. They consequently do less predicting and are more tied to the word level and to other small units of structure and meaning (p. 183).

Barbara Greene (1975) examined the multiple miscues (repeated instances in which the reader's response differed from the expected response) of 56 low, average and high readers from grades two, four and six for developmental trends by age and proficiency. The same procedures were used with 30 other readers of comparable proficiency groups.

She found the multiple miscues of less proficient readers had a higher percent of omission of unknown words while those of more able readers had a higher percent of words known to them. Multiple miscues reflected a greater reliance on semantic cues by proficient readers. Graphophonic development trends were not revealed through analysis of multiple miscues. Multiple miscues decreased as reading proficiency increased, and they showed decreased syntactic and semantic acceptability as reading proficiency decreased. The author concluded that analysis of multiple miscues can reveal aspects of reading behavior otherwise not obvious.

Kathryn Hu-Pei Au (1977) compared strategies of 15 second graders from the Hawaiian Islands who were speakers of the Hawaiian Islands' dialect. For ten days, each child taped his/her own reading of the day's reading assignment under no supervision. To compare strategies used by good and poor readers, the children were divided into two groups on the basis of their total scores on the Gates-MacGinitie Reading Test.

Poor readers made significantly more non-meaningful substitutions which began with the same letter as the word in the text than the good readers ($p < .05$), indicating that the poor readers tended to rely more heavily on graphophonic information. The poor readers rarely made self-corrections but good readers self-corrected frequently ($p < .01$). Good readers made more repetitions ($p < .047$). This seems to indicate that good readers quickly resolve the portions of the text that give them difficulty, but poor readers read on, ignoring dissonance. Seventy-two percent of the good readers' miscues showed they were using context, but only 38% of the poor readers' miscues showed they were using context ($p < .001$).

Thomas Bean's (1978) study (see above, pp. 36-37) confirmed Au's findings. Average readers in all grade levels (four, five and six) used syntactic and semantic cues more efficiently than the low group ($p < .05$). Fourth graders relied more on grapho-phonemic cues than did fifth and sixth graders ($p < .05$) and the fourth and fifth graders were less efficient users of semantic cues than sixth graders ($p < .04$). Dialect was not a significant factor in the students' decoding strategies and did not interfere with meaning.

Violette Auteri (1979) studied the strategies of readers in high, medium and low groups in several consecutive grade levels to see if patterns continued. One hundred eighty children were randomly selected from Bucks County, Pennsyl-

vania, providing ten subjects from each reading proficiency group from grades one through six.

Oral reading passages were administered according to IRI procedures until each child reached his/her frustration level. Qualitative miscue analysis revealed that the graphically similar miscues of the medium group decreased as grade level increased, and semantically acceptable miscues of the same group increased as grade level increased. The subjects in all groups and grade levels made more graphic miscues than syntactic or semantic miscues.

Andrew Biemiller (1979) compared the use of graphic and contextual cues by first graders of good and poor levels of reading ability on passages of varying difficulty levels. Eighty-one subjects from the two public schools in Ithaca, New York, read passages of increasing difficulty until they made miscues on 25% or more of the words. Thirty-four of the subjects were in an experimental reading program and 47 in a basal program. Four ability level groups were formed on the basis of the most advanced passage the student was able to read without making 25% miscues.

To measure the variations of graphic cue use, percentage of non-response errors and percentage of graphic substitutions were examined. The most able group made the lowest or nearly lowest percentage of non-response miscues on every passage, and each ability group tended to increase in percent-

ages of non-response miscues as passages increased in difficulty. Examination of performance on each child's most difficult passage read without making more than 25% miscues revealed that the lowest group made proportionately fewer non-response miscues than the other groups ($p < .005$), which suggests that the least able readers are less likely to rely on graphic cues as a strategy when dealing with difficult material than are other children.

There was a tendency for graphically similar substitutions to increase as passage difficulty increased. There were no differences between ability groups on some passages, but the best readers increased their proportions of graphic substitutions on passages which the poorer readers could not read without exceeding the 25% miscue limit. When each group's hardest passage was compared, the better readers made higher percentages of graphic substitution miscues than the poorer readers ($p < .005$), which also suggests that better readers are more flexible in changing strategies toward graphic cue use when reading difficult material.

To measure the variations of contextual cue use, percentage of contextually acceptable miscues were examined. The only trend that appeared was a non-significant tendency of the highest group to make high percentages of contextually acceptable miscues on the easy passages and lower percentages on the difficult passages. It seemed that they reduced use

of contextual information somewhat as they increased graphic cue use.

Lauren Leslie (1980) studied the effects of different miscue rates on the use of graphic and contextual information in average and below average readers by equating miscue frequency for the reading groups. Forty second-grade average readers and 40 third- and sixth-grade poor readers (chosen on the basis of teacher judgment and two standardized reading tests) read two second-grade readability level passages (a fictional narrative and a non-fictional history).

Comparisons of miscue type, reading group and level of miscues per hundred words (MPHW) were measured. Levels of MPHW were Level 1 = 1-5, Level 2 = 6-10 and Level 3 = 11-16, to match the IRI functional groups of independent, instructional and frustration. The average group made proportionally more miscues which were semantically appropriate at the passage level (narrative story, $p < .05$; expositional story, $p < .001$) while the below-average group made more miscues which were graphically similar (narrative story, $p < .01$; expositional story, $p < .05$). The groups showed other differences but not for both stories.

Significant differences between MPHW levels 1 and 2 were found. The proportion of non-contextually appropriate miscues increased as MPHW increased ($p < .001$). The proportion of grammatically appropriate miscues which changed the

author's meaning decreased as MPHW increased (F = 3.44).

Karen D'Angelo (1980, 1981) compared the substitution miscues of 60 poor readers with 60 good readers to examine differences in reading strategies. The poor readers were randomly selected from the Reading Clinic at the University of Maryland. The good readers were randomly selected from four public schools. Both groups ranged from fourth to eighth grades. Both groups were identified by their instructional levels on the Diagnostic Reading Scales (DRS) (poor group: one to five years below grade level; good group: one to three years above grade level).

Substitution miscues were analyzed qualitatively and quantitatively at instructional and frustration levels of the DRS. At the instructional level, the good readers made 172 substitutions and the poor readers 254. At the frustration level, the good readers made 101 and the poor readers 431. The good readers corrected a higher percentage of substitutions (34% versus 20%). Poor readers corrected more substitutions which were graphophonemically dissimilar (72%) than the good readers (31%). Both groups corrected more miscues which were semantically unacceptable (good readers, 73% at instructional level; 85% at frustration level; poor readers, 81% at instructional level; 67% at frustration level) than miscues which were syntactically unacceptable (good readers, 56% at instructional level; 70% at frustration level; poor readers, 53% at instructional level; 43% at frustration

level). Both groups showed an awareness of meaning and made corrections more frequently by using semantics than syntax.

As the difficulty of the material increased, the good readers seemed to be more aware of syntax and semantics. Good readers corrected more miscues at the frustration level which distorted syntax (70%) and semantics (85%) than they did at the instructional level (56% and 73% respectively). The opposite was true for the poor readers (43% and 67% at the frustration level; 53% and 81% at the instructional level). The study did not show marked difference between the two groups at the instructional level.

Frank Potter (1980) questioned the validity of miscue analysis as a means to learning the strategies of good and poor readers. Subjects with a mean age of 8.3 years were chosen from the first year classes of a junior school in the Northwest. Sixteen better and 12 poorer readers were identified using the Neale Analysis of Reading Ability. Words were presented to each student in two forms--in passage context and in a randomly ordered list.

All readers made significantly fewer miscues on words in context than out of context ($p < .01$). Similar syntactic acceptability scores were made on words both in and out of context, the better readers tending to make more syntactically acceptable miscues than the poor readers, both in (n.s.) and out of context ($p < .10$). Potter reasoned that it is a mis-

take to conclude that better readers make better use of syntactic context, since in the one test there was no context. The semantic acceptability scores, however, were nearly equally low for both groups on the list condition, with the better readers scoring somewhat higher than the poor readers on the passage condition.

Qualitative analysis of the in-context miscues from poor readers would seem to indicate that they made very little use of context. Quantitative analysis of their miscues in and out of context, however, indicated that they did use contextual information when they read because they made significantly fewer miscues while reading words in the passage condition than in the list condition ($p < .05$).

Potter did not question the usefulness of qualitative miscue analysis. He concluded that it should be modified in order to make it more precise and valid, especially for measuring a reader's use of syntactic context.

Elaine Wangberg and Bruce Thompson (1982) used miscue analysis with cognitive development tasks to find out which strategies distinguish readers of varying ability levels. Subjects, 50 second graders from a middle class public school, read passages from an informal reading inventory until the frustration level was reached. They then read two passages at that level for miscue analysis. They also completed two Piagetian tasks. They were grouped into seven ability groups

according to reading frustration levels.

The cognitive development measures did not differentiate the ability groups. The authors concluded that those measures should be used primarily to evaluate reading readiness.

The groups of more proficient readers were distinguished from the groups of less proficient readers by a tendency to make semantically acceptable miscues. Correction behavior did not contribute substantially to differentiation of ability groups.

Miscue analysis has shown, then, that not only do poorer readers make more miscues than better readers (Y. Goodman, 1971; B. Greene, 1975; Leslie, 1980), but they also differ in the quality of the miscues they make. Miscue analysis provides evidence that the better readers tend to rely more on syntactic and semantic information and make more efficient use of it than do poorer readers (Au, 1977; Auteri, 1979; Bean, 1978; D'Angelo, 1980; Y. Goodman, 1971; K. Goodman & C. Burke, 1973; B. Greene, 1975; Leslie, 1980; Menosky, 1972; Wangberg & Thompson, 1982). Better readers also have the ability to shift with greater speed and flexibility to graphophonemic cues when they need to (Biemiller, 1979; Y. Goodman, 1971).

Miscue Strategies and Comprehension

Mona Beebe (1980) studied the effect that substitution miscues had on retelling ability and silent reading compre-

hension ability. Subjects were 46 fourth-grade boys from two urban schools who were reading at or above grade level. One story was administered to all subjects according to RMI procedures. The Reading Comprehension subtest of the Canadian Test of Basic Skills was administered a few days later. Beebe found that the total number of substitutions and percentage of syntactically/semantically unacceptable substitutions correlated negatively to retelling and comprehension scores ($p < .001$). The percentage of syntactically/semantically acceptable substitutions and corrected substitutions correlated positively to comprehension ($p < .006$ and $p < .01$ respectively) and retelling scores ($p < .004$). Beebe concluded that silent reading miscue patterns can be inferred through miscue analysis.

The analysis of oral reading miscues has provided useful information about the reading process and the strategies of various kinds of readers. A major criticism of miscue analysis as a basis of investigating the reading process is that little is known about how similar the oral reading and silent reading processes are; therefore, studies of oral reading miscues can not provide a reliable base for a model of the reading process (Groff, 1980; Mosenthal, 1976-1977; Newman, 1978). Miscue analysis rests on the critical presupposition that there is a single reading process that underlies oral and silent reading processes, good and bad read-

ing processes, and reading for different purposes. That is not to say that oral and silent reading processes are the same but that the oral reading process is a "window" to the reading process (Cambourne, 1976-1977; K. Goodman, 1976-1977). The use of both miscue analysis and cloze procedure for assessing both oral and silent reading respectively has been recommended as a way to achieve a more thorough psycholinguistic description of the reading process (K. Goodman, 1976-1977; Newman, 1978).

Miscue Analysis and Reading Instruction

Miscue analysis based on RMI procedures has been used in reading research to investigate the effects that instructional methods have on the miscue patterns of students. Effects of programs which emphasize phonics instruction and those stressing whole language development have been studied singularly and together. The usefulness of strategy lessons has also been explored.

Phonic Emphasis Approach

Alice Cohen (1974-1975) observed trends in the miscues of first graders who were being taught reading by a method which emphasized blending letter sounds as a means of identifying words. Two heterogeneously grouped first-grade classes (50 subjects) from a suburban middle class community in New York City made up the sample. IQ ranged from 87 to 143 and age from 6.0 to 7.0, at the beginning of the study. Each

month, for the last eight months of first grade, subjects read two types of materials, one instructional (from their basal reader) and one non-instructional (from a trade-book). Good and poor readers were identified based on miscue quantity.

The most common miscues were No Response, Nonsense and Word Substitutions. During the first four months, No Response ranked the highest but during the second four months, the Nonsense miscues increased and the No Response miscues decreased until they were equaled, while Word Substitution miscues increased and exceeded both. The No Response miscue profile was true for all groups within the total group. The results from the good and poor readers indicate that No Response may be associated with the phonic instructional method. Cohen suggested that students taught by this method are unaware that there are alternative sources of information and with their limited and uncertain phonic knowledge early in the year, the No Response miscue predominates.

The increase in Nonsense miscues also occurred across all groups, although the good readers showed a declining trend by the last months, whereas the poor readers showed a gradual increase until reaching a plateau during the final months. Nonsense miscues, therefore, appear to be associated with the phonic emphasis approach also. The greater number of Nonsense miscues early in the year by good readers im-

plies a better ability in recalling letter-sounds. The Nonsense miscues of poor readers increased also but more slowly. Cohen asserted that a high number of Nonsense miscues may be a preparatory stage toward more mature reading characteristics in children who are instructed by this method.

All groups showed a consistent increase in Word Substitution miscues with the good readers making more than the other groups throughout the year. The miscue trend was toward an increase in using graphic and meaning strategies to identify words.

All groups improved their skill in using graphic information steadily throughout the year. The good readers made the highest graphic similarity scores, followed by the total group; the poor readers made the lowest scores. Word substitutions for all groups produced low grammatical acceptability scores initially but improved throughout the year.

Language Emphasis Approach

Dorothy Anderson (1974) studied the effect that the use of the student's natural language in reading instruction had on the miscues of beginning readers. Subjects were ten first graders. Five were given the treatment and five were not. Miscues of all ten subjects were analyzed before and after the treatment period.

She found that the treatment group made the greatest gains in focusing their reading on meaning. After the treat-

ment group participated in their natural language activities, they produced a greater percentage of miscues which retained grammatical function and were grammatically and semantically acceptable. They responded to language cues and corrected a greater percentage of their miscues than the control group. The uncorrected miscues of the treatment group resulted in no meaning change. Anderson concluded that using the student's own familiar language structures for first-grade reading instruction provides him/her with the greatest chance to achieve reading success.

Dorothy Watson (1974) studied the effectiveness of exposure to a saturated book program on readers' miscue quality. Miscue analysis of oral readings made by 27 fifth-grade students was performed before and after a four-month exposure to a saturated book environment of over 3,000 paperback books. Subjects made up three groups. Group A received reading instruction primarily from a basal program but Groups B and C primarily from an individualized program. Group C received strategy lessons in order to help each reader strengthen weak strategies. Strategies of high, average and low readers were compared also. The total group made significant gains in their abilities to use contextual cues and their MPHW decreased notably after the treatment period. The low readers made the most significant gains increasing proficiency.

James Tortelli (1975) studied the effects of strategy

lessons on the miscues of twelve below-average readers in grades four, five and six. Subjects included black and white, male and female students. They were selected because their scores on the Iowa Test of Basic Skills and the California Test of Mental Maturity, Short-Form were below the median test scores.

The RMI was used to diagnose the reading strengths and weaknesses of each student. Strategy lessons were designed on the basis of these analyses. Group, subgroup and individual activities were planned, depending on the commonality of the detected strengths and weaknesses. The lessons emphasized whole language and context activities in order to develop awareness and efficiency for using syntactic and semantic information.

The RMI was then administered in order to evaluate the effects of the lessons. The author concluded that the strategy lessons helped to develop an awareness of the relationship between oral and written language, which further helped students to acquire meaning while reading. Habitual associations were reduced, self-correction strategies were strengthened and although the quantity of miscues were not altered, the miscues improved in quality.

Fannye Love (1979) studied the effectiveness of strategy lessons for improving the reading proficiency of second graders. Eighteen subjects were selected from a Midwestern ele-

mentary school located on a military base. Students were assigned randomly to experimental and control groups. The RMI was administered to both groups and reading strategy lessons were given to the experimental group for six weeks, after which a posttest (Allyn and Bacon Basal Readers, 1973) was administered to both groups.

The experimental group showed no significant score gain over the control group but did show some gain. The author recommended that reading strategy lessons be used only with slow readers.

Comparing Phonic Emphasis and Meaning Emphasis Approaches

Miscue patterns have been studied in order to compare the effects of reading instructional methods which emphasize phonics with those that emphasize meaning on student reading strategies (Dank, 1977; De Lawter, 1975; Ramig & Hall, 1980). Jayne De Lawter (1975) compared the strategies of the students who had been instructed for two years by a sound-symbol decoding emphasis approach with students instructed for two years by a language and meaning emphasis approach. Subjects were 169 second graders from low income areas in New York City.

The subjects read 30 test words in list or context form, which did not appear in either instructional program. More than half of the miscues made by the decoding emphasis group were nonwords. The meaning emphasis group made a higher percentage of miscues on real words than on nonwords.

Most of the real word miscues from both groups were syntactically acceptable. About half of the real word miscues from both groups were semantically acceptable. The actual number of miscues which were either syntactically or semantically acceptable was lower for the decoding emphasis group because the majority of their miscues were nonwords.

Marion Dank (1977) compared the types of miscues made by ten second graders instructed by use of a reading program which integrated language-experience, communication and word recognition strategies (Reading 360, Ginn & Company, 1970) with the types of miscues made by ten second graders instructed by use of a reading program which placed primary emphasis upon translating graphic symbols into sounds (Programmed Reading, McGraw-Hill, 1973). Subjects were selected from two similar classrooms in the same school in Norfolk, Virginia. All received formal reading instruction in one of the reading programs in first grade and were continuing with the same program in second grade.

Each subject read the same story of 509 words. Analysis revealed that the Programmed Reading group produced 18.8% more miscues which were high in graphic similarity and 19% more miscues which were high in sound similarity than the Reading 360 group. Dank claimed that these differences were due to the high reliance that the Programmed Reading group had on letter-sound correspondance for identifying unfamiliar

words.

The Reading 360 group made 7.08% more miscues which did not change the story's meaning than the Programmed Reading group. An average of 14.09% of the Reading 360 group's miscues did not change the author's intended meaning, but only 7.01% of the miscues made by the Programmed Reading group did not change the author's intended meaning. Dank asserted that instructional approaches affected the differences in miscue types between the groups. Dank observed:

> The study indicated that for those selected second graders their oral reading deviations showed a resemblance to the emphasis that their respective program purported and that the instructional basis of their programs was reflected in the word recognition and comprehension strategies they did or did not employ (p. 69).

Christopher Ramig and Mary Anne Hall (1980) compared the types of miscues made by 21 first graders taught reading by the language experience approach with 21 first graders taught by a basal reader approach. Subjects were from two heterogeneously grouped classrooms in a public school in Conyers, Georgia, whose population ranged from very high to very low socioeconomic level. The school customarily used the basal reading approach, but one teacher preferred to use the language experience approach and did so.

The students read a text of 140 words at the end of May. Analysis of miscues showed that the two groups did not differ significantly in mean number of miscues (11.8, basal

group; 10.3, language experience group). There were no significant differences between group means for graphophonic, syntactic or semantic miscues. The results seem to indicate that beginning readers taught by either method do not differ in their use of available written language cues. The authors suggested that the results may have shown significant differences had they provided texts of varying difficulty to match reader ability instead of using the same texts for all subjects. In that way, miscue patterns would have been more representative for those who had miscued infrequently.

Miscue analysis, therefore, has provided evidence that reading instructional approaches are likely to affect readers' strategies. Students learning to read through phonics emphasis approaches are apt to produce a larger number of nonsense miscues (A. Cohen, 1974-1975; De Lawter, 1975). Students of language emphasis approaches respond to contextual cues and develop efficient self-correction strategies (D. Anderson, 1974; Dank, 1977; Tortelli, 1975; Watson, 1974).

Summary

Miscue analysis research has consistently provided support for Goodman's theory. It has shown that all readers use the three cuing systems but differently according to ability, developmental level and instructional method. It has given insights into how beginning readers learn to read and the importance of the reader's own language to reading and learning

how to read. It should be kept in mind that miscue patterns can be affected by the difficulty of the text for the reader and by text variables such as syntax, vocabulary and redundancy.

CLOZE PROCEDURE

Introduction

The cloze procedure was introduced by Wilson Taylor (1953) as a measure of readability (cf. below, pp. 95) and has since become an accepted means of assessing both the readability of various materials and the reading ability of various subjects. Taylor named the technique "cloze" procedure because he felt it was derived from the Gestalt psychological term for "closure." He defined cloze procedure as:

> A method of intercepting a message from a "transmitter" (writer or speaker), mutilating its language patterns by deleting parts, and so administering it to "receivers" (readers or listeners) that their attempts to make the patterns whole again potentially yield a considerable number of cloze units (p. 416).

Construction of cloze tests requires a random and systematic method of deleting words from the test passage. Two types of deletion systems have been widely used--lexical and structural. Both involve a random deletion of every nth word. For lexical deletions, the only words deleted are every nth noun, main verb or adjective (W. Weaver & Kingston, 1963). For structural deletions, every nth word in the passage is deleted, sampling a variety of clues such as function

Chart 1

Summary of Research Using Miscue Analysis

Study	Subjects	Results	Editorial Comments
Allen, 1970	5 2nd graders 5 4th graders 5 6th graders	1. Over 70% of the miscues resulted in totally syntactically acceptable structures. 3. 10% of the 2nd graders' miscues, 21% of the 4th graders' and 15% of the 6th graders' miscues showed no amount of semantic acceptability.	1. Small sample size. 2. No mention of reliability or validity check. 3. Basal materials at subjects' own grade level. 4. Substitution miscues only. 5. Descriptive analysis.
Anderson, 1974	10 1st graders: 5 received reading instruction based on subjects' natural language. 5 did not.	Natural language group corrected more miscues and made a higher percentage of miscues which retained grammatical function and were grammatically and semantically acceptable.	1. Small sample size. 2. No mention of reliability or validity check. 3. No description of test materials. 4. No description of what constituted miscues. 5. Descriptive analysis.
Auteri, 1979	180 from 1st to 6th grades classified as low, medium or high ability	1. Graphically similar miscues of medium group decreased as grade level increased. 2. Semantically acceptable miscues of medium group increased as grade level increased. 3. All groups and grade levels made more graphic miscues than syntactic or semantic miscues.	1. Random sampling procedure. 2. No mention of reliability or validity check. 3. Materials from an IRI were used until subject reached frustration level. 4. No description of what constituted miscues. 5. No levels of significance reported.

Study	Subjects	Results	Editorial Comments
Au, 1977	15 2nd graders classed as good or poor readers	1. Poor readers made more non-meaningful substitutions which began with the same letter as the word in the text ($p < .05$). 2. Good readers made more self-corrections ($p < .01$), repetitions ($p < .047$) and contextually acceptable miscues ($p < .001$).	1. Small sample size. 2. No mention of a reliability or validity check. 3. Materials were the day's reading assignments. 4. Substitutions (4 types), intrusions, self-corrections, repetitions, hesitations, and omissions.
Bean, 1978	50 4th- thru' 6th-grade speakers of Hawaiian Islands dialect: 20 average, 30 below average readers	1. Dialect-based miscues did not disrupt meaning and were mainly phonological. 2. Average readers made more dialect-based miscues than below average readers. 3. The 6th graders made more dialect-based miscues than the other grade levels. 4. Average readers in all grade levels used syntactic and semantic cues more efficiently than the low group ($p < .05$).	1. Subjects classified according to teacher judgment and 2 standardized tests. 2. Reliability coefficients of .89, .88 and .79 for 3 teacher assessments. 3. Readability of materials equaled grade levels of subjects. 4. No description of what constituted miscues.
Beebe	46 4th-grade boys reading at or above grade level	1. Total number of substitutions and percentage of syntactically/semantically unacceptable substitutions correlated negatively with retelling and comprehension scores ($p < .001$). 2. The percentage of syntactically/semantically acceptable substitutions and corrected substitutions correlated positively with comprehension ($p < .006$ and $p < .01$ respectively) and retelling scores ($p < .004$).	1. No mention of reliability or validity check. 2. All subjects read same story. Readability level not given. 3. Substitution miscues only.

Study	Subject	Results	Editorial Comments
Biemiller, 1970	44 1st graders: 24 middle suburban, 20 poverty rural area	1. The percentage of contextually acceptable miscues increased from the non-response (NR) phase to the post-NR phase ($p < .05$). 2. The percentage of contextually acceptable substitutions declined between the pre-NR and NR phases and increased during the post-NR phase ($p < .01$). 3. The percentage of graphically similar substitutions which were also contextually acceptable was greater at the post-NR phase than both of the other two phases ($p < .005$).	1. 2 judges agreed on coding of all but 3 miscues from a sample of 103. 2. Materials were classroom reading assignments. 3. Non-responses, substitutions, insertions, omissions and self-corrections.
Biemiller, 1979	81 1st graders: 34 experimental reading program, 47 basal program Classed into four ability groups	1. The most able group made the lowest or nearly lowest percentage of NR miscues on every passage and each ability group tended to increase in percentages of NR miscues as passages increased in difficulty. 2. The lowest group made proportionately fewer NR miscues than the other groups on their hardest passages ($p < .005$). 3. Graphically similar substitutions tended to increase as passage difficulty increased. 4. Better readers made more graphic substitution miscues than the poorer readers on their hardest passages ($p < .005$).	1. Subjects classified on the basis of the most advanced passage they were able to read without making 25% miscues. 2. 2 judges agreed on coding of all but 3 miscues from a sample of 103. 3. Materials from pre-primer level to end of 2nd grade level. 4. Non-responses, substitutions, insertions, omissions and self-corrections.

Study	Subjects	Results	Editorial Comments
Burke, E., 1976	18 7,8,9 year olds: 6 from each group	1. Semantic acceptability scores increased with each year of age ($p < .01$). 2. Graphic proximity scores showed a V-shaped trend ($p < .05$) indicating almost no increase from ages 7 to 9.	1. Small sample size. 2. No mention of reliability or validity check. 3. Difficulty of materials appropriate to age level. 4. Description of scale for each category scored, but no description of what constituted miscues.
Christie, 1978	20 7 and 8 year olds	Subjects made more syntactically and/or semantically unacceptable miscues on a passage containing syntactic structures of older children than on a passage containing those of young children ($p < .01$).	1. Subjects randomly selected from suburban school. 2. No mention of reliability or validity check. 3. Substitutions, omissions, insertions, reversals and repetitions.
Christie & Alonso, 1980	17 1st graders 17 3rd graders Both groups read at grade level	1. Subjects made more graphically similar miscues on the frustration level than on the instructional level ($p < .05$). 2. They made more miscues retaining grammatical function at the frustration level ($p < .05$), with 3rd graders making higher scores than 1st graders ($p < .01$, grammatical function; $p < .001$ grammatical acceptability). 3. They made fewer semantically acceptable miscues at the frustration level ($p < .05$), with 3rd graders making more than 1st graders ($p < .05$). 4. They made fewer self corrections at the frustration level ($p < .001$).	1. Subjects chosen on the basis of teacher judgment and performance on a grade-appropriate passage. 2. No mention of reliability or validity check. 3. Materials were a series of increasingly difficult passages until frustration level was reached. 4. Substitutions, omissions, insertions, repetitions and promptings.

Study	Subjects	Results	Editorial Comments
		5. Quantitative analysis did not reveal differences in error type of passage difficulty or grade level.	
Clay, 1968, 1969	100 5 year olds: classed into 4 progress groups	1. 72% of the substitutions were grammatically acceptable. 2. 43% were similar to the text graphophonemically. 3. 26% of all miscues were self-corrected. Each higher group corrected more than the group lower ($p < .01$).	1. Scoring of 6 observers did not differ significantly from investigator's scoring. 2. Materials were classroom reading assignments. 3. No description of what constituted miscues.
Cohen, 1974-1975	50 1st graders taught by a phonic emphasis approach	1. No Response miscues were most common during the first four months, Nonsense miscues increased and No Response decreased until equaled during the second four months while substitutions increased and exceeded both. 2. No Response and Nonsense miscues appeared to be associated with the phonic emphasis approach. 3. Scores for graphic similarity and grammatical acceptability improved throughout the year.	1. The 2 judges' classification of miscues on 2 subjects yielded a correlation coefficient of .983. 2. Grade level instructional and non-instructional materials. 3. No Response, don't know, insertions, omissions, self-corrections, sounding out and substitutions. 4. Descriptive analysis.
D'Angelo, 1980, 1981	120 4th-8th graders: 60 good readers 60 poor readers	1. The good readers corrected more substitutions than poor readers. 2. Poor readers corrected more which were graphophonemically dissimilar than good readers. 3. Both groups corrected more semantically unacceptable substitutions than syntactically unacceptable.	1. Random sampling procedures for both groups. 2. Test of inter-judge reliability showed 97% agreement for 2 judges. 3. Materials were graded passages from 3rd to 8th. 4. Substitution miscues only.

Study	Subjects	Results	Editorial Comments
		4. Good readers corrected more syntactically and semantically unacceptable miscues at the frustration level than at the instructional level. The opposite was true for the poor readers.	5. Descriptive analysis.
Dank, 1977	20 2nd graders: 10 in an integrated language-experience program; 10 in a phonic emphasis program	1. Subjects in the phonics program made more miscues high in graphic and sound similarity. 2. Those in the language-experience program made more miscues which did not change the story's meaning.	1. Small group sizes. 2. No mention of reliability or validity check. 3. Limited description of test materials. 4. No description of what constituted miscues. 5. Descriptive analysis.
DeLawter, 1975	169 2nd graders: 1 group in a phonics emphasis program; 1 group in a meaning emphasis program	1. Miscues from the phonics emphasis group were mostly nonwords, while miscues from the meaning emphasis group were mostly real words. 2. Most of the real word miscues from both groups were syntactically acceptable and half were semantically acceptable.	1. No mention of reliability or validity check. 2. 30 test words, not appearing in instructional program, presented in isolation and context. 3. Substitution and omission miscues only. 4. Descriptive analysis.
Eberwein, 1982	20 3rd grade black students of poor reading ability	Dialect-based miscues did not significantly influence comprehension retelling scores.	1. Small group sizes. 2. No mention of reliability or validity check. 3. Materials at subjects' instructional level. 4. All words which deviated from the print were counted as miscues.

Study	Subjects	Results	Editorial Comments
Fay, Trupin, & Townes, 1981	33 disabled readers, ages 7.1-8.9 years; classed high, medium and low	1. All groups used graphic cues best. 2. Medium and high groups used graphic cues more than the low group ($p < .05$). 3. The higher groups used syntactic and semantic cues better than the lower groups ($p < .001$).	1. Small group sizes. 2. No mention of reliability or validity check. 3. Subjects read passages from Spache Diagnostic Reading Scales (1963) until they reached frustration level. 4. Substitutions, insertions, omissions and word order.
Goodman, K., 1965a	100 1st, 2nd and 3rd graders	69% of the 1st graders identified 2/3 or more of the words in stories that they did not recognize on lists; 66% of the 2nd graders knew 3/4 or more in stories; and 67% of the 3rd graders knew more than 4/5 of the words in stories that they missed on lists.	1. No mention of reliability or validity check. 2. Materials from reading series not used by the school and at subject's grade level. 3. Descriptive analysis.
Goodman & Burke, 1968	12 students who did a great deal of pleasure reading: 8 4th graders 4 5th graders	1. 83% of the miscues resulted in totally syntactically acceptable structures. 2. 11% were syntactically acceptable with the prior portion of the sentence and 1% with the following portion. 3. 61% were semantically acceptable within the passage. 4. 15% were totally unacceptable semantically.	1. Small sample size. 2. No mention of reliability or validity check. 3. Basal materials representative of grade level. 4. Includes complete manual for miscue analysis procedures used. 5. Descriptive analysis.
Goodman & Burke, 1969	18 proficient readers: 6 each from grades 2,3,4	1. 1061 of 1742 miscues were categorized as involving syntactic re-transformations.	1. Small sample size. 2. No mention of reliability or validity check.

Study	Subjects	Results	Editorial Comments
		2. Re-transformation miscues could be classed into 3 categories: those which showed a difference in the reader's deep structure from the author's, those which preserved deep structure but used different transformational rules (idiolect and dialect) to attain surface structure, and those which retained the author's deep structure by using an optional surface level structure.	3. Basal materials representative of grade level. 4. Includes complete manual for miscue analysis procedures used. 5. Descriptive analysis.
Goodman & Burke, 1973	96 students in grades 2,4,6,8 and 10 classed into ability groups with 5-6 subjects per group	1. Substitutions were the most common type of miscue. 2. The better readers tended to make syntactically acceptable miscues while the weaker readers made more partially and fully unacceptable syntactic miscues. 3. Percentage of miscues which were semantically unacceptable clearly decreased as proficiency increased.	1. Small group sizes. 2. A second judge checked coding sheets for scoring errors. 3. Materials selected were believed to be a somewhat difficult task for groups. 4. Includes complete manual for miscue analysis procedures used. 5. Descriptive analysis.
Goodman, Y., 1968	6 beginning readers	Hypotheses for further research on beginning readers were provided.	1. Small sample size. 2. No mention of a reliability or validity check. 3. No description of materials. 4. No description of what constituted miscues. 5. Descriptive analysis.

Study	Subjects	Results	Editorial Comments
Goodman, Y., 1971	6 black students in 2nd year of reading instruction: 3 average; 3 slow	Hypotheses for further research on average and slow readers were provided.	1. Small sample size. 2. 3 judges involved in rating miscues. 2 of the 3 agreed on the rating of 90% of the miscues. A 4th judge helped when the 3 could not reach a consensus. 3. Material selected to pose difficulty but not frustration. 4. In-depth analysis of all miscues. 5. Descriptive analysis.
Greene, 1975	56 low, average and high readers, grades 2,4 and 6. An additional group of 30 with comparable proficiency	1. Multiple miscues of less able readers had more omissions of unknown words while those of better readers tended to be known words. 2. Better readers showed a greater reliance on semantic cues. 3. Multiple miscues decreased as proficiency increased and showed decreased syntactic and semantic acceptability as proficiency decreased.	1. No mention of reliability or validity check. 2. Basal materials. 3. Multiple miscues only. 4. Descriptive analysis.
Hood, 1982	52 2nd graders divided into 4 reading accuracy groups	1. Syntactic and semantic acceptability of miscues were associated with both reader accuracy and text characteristics. 2. Correction behavior appeared to be associated with text characteristics.	1. Reliability coefficients for 3 judges ranged from .90 to .99 for all scores except .77 to .91 for 2 categories and .59 to .74 for 2 categories. 2. Materials rated for readability, familiarity of vocabulary and redundancy. 3. Substitutions, nonsense, parts-of-words, no response, insertions and omissions.

Study	Subjects	Results	Editorial Comments
Randall & Wood, 1979	25 5th graders: 13 classed as LoC-HiMR; 12 HiC-LoMR	The Low Comprehension-High Word Recognition (LoC-HiWR) group made nearly half as many miscues as the High Comprehension-Low Word Recognition (HiC-LoWR) group but a larger proportion of the miscues from the LoC-HiWR group were contextually inappropriate.	1. Subjects selected from 160 5th graders from 4 schools. 2. Reliability coefficients for 3 judges ranged from 70.2 to 98.6 for 5 of the 6 miscue types and 56.6 for the remaining. 3. Two stories, a high 3rd-grade level and a 5th-grade level. 4. No description of what constituted miscues. 5. Statistical tests were not performed on the scores.
Kibby, 1979	46 disabled readers in grades 4,5,6 and 7	1. 76% of the subjects were classified as weak in contextual cue use on the difficult passage and 2% on the less difficult passage. 2. 4% were classified as strong in contextual cue use on the difficult passage and 74% on the less difficult passage.	1. No mention of reliability or validity check. 2. Two passages (a difficult and a less difficult) from the Spache Diagnostic Reading Scales (1972) selected for analysis for each subject based on miscue quantity. 3. No description of what constituted miscues. 4. Descriptive analysis.
Leslie, 1980	60 average 2nd-grade readers 60 poor 3rd- and 4th-grade readers	The average group made more semantically appropriate miscues at the passage level (narrative, $p < .05$; expositional, $p < .001$) while the poor group made more graphically similar miscues (narrative, $p < .01$; expositional, $p < .05$).	1. Reliability coefficients for 4 judges ranged from .81 to .99 for 8 miscue types. 2. Materials at 2nd-grade level. 3. Word order changes, 4 types of substitutions, insertions and 2 types of omissions.

Study	Subjects	Results	Editorial Comments
Lou, 1982	38 2nd graders	The frequency of miscues that resulted in syntactic structures more likely found in oral discourse increased with the decrease in written feature production scores ($p < .05$).	1. Correlation coefficient of .94 ($p < .05$) for two judges determining written feature production scores. 2. Materials rated 2nd-grade readability score from 3 formulae. 3. Miscues restructuring syntax only.
Love, 1979	18 2nd graders: 11 experimental 7 control	The experimental group which received strategy lessons showed no significant score gain over the control group.	1. Small group sizes. 2. No mention of reliability or validity check. 3. Limited description of materials. 4. No description of what constituted miscues.
MacMullin, 1980	80 2nd graders	1. Subjects identified more words in context than in isolation ($p < .005$). 2. The graphic similarity score was higher for substitutions in isolation than those in context ($p < .005$). 3. 67% of the substitutions were syntactically and 33% semantically acceptable in context.	1. Reliability coefficient of .95 for retest of 14 subjects for both test situations. 2. Passages from primary level to 3rd-grade level for each subject. 3. Substitution miscues only.
Menosky, 1972	18 average readers: 3 each from grades 3, 4, 6 and 8 plus 3 low and 3 high readers	1. All groups made more syntactically and semantically unacceptable miscues in the first of the three portions of the passages. 2. Average subjects of all levels controlled syntactic structures more strongly than meaning.	1. Small group sizes. 2. No mention of reliability or validity check. 3. Limited description of materials. 4. No description of what constituted miscues.

Study	Subjects	Results	Editorial Comments
	from 4th grade	3. Higher level subjects were better at supplying semantically acceptable as well as syntactically acceptable structures. 4. All groups relied on preceding material and the anticipation of coming material while processing cues.	5. Descriptive analysis.
Nurss, 1969	144 2nd graders: 108 scored 90% or better on sight vocabulary test; 36 not screened	1. Both groups made more miscues when reading more complex sentences ($p < .05$). 2. Uncorrected miscues were both syntactically and semantically acceptable more often in sentences of low syntactic complexity for both groups.	1. No mention of reliability or validity check. 2. Limited description of materials. 3. Substitutions, self-corrections, additions, omissions, repetitions, and examiner aid.
Pflaum, 1978; Pflaum & Bryan, 1980	22 disabled readers and 29 normal readers age 8.6 to 12.4 from poor district; 14 disabled and 14 normal readers age 7.6 to 12.3 from affluent district	1. Disabled readers made more miscues than normal readers. 2. Disabled groups made higher proportions of meaning change miscues than normal groups ($p < .01$). 3. The disabled groups self-corrected meaning change miscues less efficiently ($p < .01$). 4. Affluent district group made more multiple attempts at self-corrections than the poor district group ($p < .05$).	1. Agreement levels for 3 judges were 91.9% for identifying miscues and 85.5% for coding miscues. 2. One story rewritten into 8 levels from grades 1-9. 3. Miscues coded were called "all text deviations."

Study	Subjects	Results	Editorial Comments
Potter, 1980	16 better readers 12 poorer readers Mean age: 8.3 yrs.	1. The total group made fewer miscues on words in context than in list form ($p < .01$). 2. The better readers tended to make more syntactically acceptable miscues both in and out of context than the poor readers. 3. The poor readers did use contextual information because they made fewer miscues while reading words in context ($p < .05$).	1. No mention of reliability or validity check. 2. Better readers given a more difficult passage than the poorer readers. 3. Substitution miscues only.
Ramig & Hall,	42 1st graders: 21 language experience approach; 21 basal reader approach	The subjects taught by either method did not differ in their use of language cues.	1. No mention of reliability or validity check. 2. All subjects read same story. 3. Substitutions, omissions, insertions and self-corrections were examined.
Rigg, 1975	9 6th graders: 4 No. black English speakers 4 So. black English speakers 1 So. white English speaker	1. The Northern and Southern black groups produced similar amounts and types of black English features in their oral reading miscues with tendency for the Southern group to produce more than the Northern group during an interview. 2. Both black groups tended to display a larger number of black-English features during oral reading than during the interview. 3. The black Southerners' dialect was different from that of the white Southerner.	1. Small sample size. 2. No mention of reliability or validity check. 3. All subjects read same 6th-grade level story. 4. No description of what constituted miscues. 5. Descriptive analysis.

Study	Subjects	Results	Editorial Comments
		4. The speakers of black dialect produced 20% black-English features and 80% standard English features, on average, during oral reading and interviews.	
Rode, 1974-1975	54 average readers: 18 from each grade 3,4,5	1. Eye-voice span scores were higher for noun phrases than verb phrases ($p < .001$). 2. The 3rd graders completed more phrase units than the older groups ($p < .05$) but the older groups completed more entire clauses ($p < .01$). 3. 62% of the miscues were syntactically and semantically acceptable.	1. No mention of reliability or validity check. 2. Sentences constructed using 2nd-grade vocabulary. 3. No description of what constituted miscues.
Schlieper, 1977	71 1st graders 94 2nd graders 72 3rd graders All from underprivileged innercity districts	There was a sharp increase in grammatically acceptable miscues as grade levels advanced for the total group and for those subjects who achieved grade scores of 2.6 to 3.0 in all three grades.	1. No mention of reliability or validity check. 2. All subjects read the same passage. 3. Miscues tabulated were real word substitutions, nonsense words, omissions and repetitions. 4. Descriptive analysis.
Sims, 1972	10 2nd graders, black English speakers	1. Between 25% and 50% of the miscues were syntactically and semantically acceptable. 2. They tended not to correct miscues.	1. Small sample size. 2. No mention of reliability or validity check. 3. Materials written in black dialect and standard English.

Study	Subjects	Results	Editorial Comments
		3. Dialect-based miscues involved changes from standard English to black dialect and vice versa but did not change deep structure.	4. No description of what constituted miscues. 5. Descriptive analysis.
Tortelli, 1975	12 below-average readers, grades 4,5,6	Reading strategy lessons helped develop an awareness of the relationship between oral and written language, reduced habitual associations, strengthened self-correction strategies and improved miscue quality.	1. Small sample size. 2. No mention of reliability or validity check. 3. No description of materials. 4. No description of what constituted miscues. 5. Descriptive analysis.
Wangberg & Thompson, 1982	50 2nd graders 7 ability groups	Groups of more proficient readers were distinguished from the groups of less proficient readers by their tendency to make semantically acceptable miscues.	1. No mention of a reliability or validity check. 2. Materials at frustration level. 3. No description of what constituted miscues.
Watson, 1974	27 5th graders divided into 3 instructional treatment groups and 3 ability classifications	The total group made significant gains in contextual cue use after a four-month exposure to a saturated book environment, with low readers making the most significant gains.	1. No mention of reliability or validity check. 2. No description of test materials. 3. No description of what constituted miscues. 4. Levels of significance not reported.

Study	Subjects	Results	Editorial Comments
Weber, 1970	21 1st graders 12 faster moving group 9 slower	1. Nearly 80% of the miscues were classified as substitutions. 2. Graphic similarity scores showed that the high group's responses more closely resembled the text. 3. Beginning letters of words were the most important graphic cue. 4. Both groups made high percentages of grammatically acceptable miscues. 5. During the year scores for grammatical acceptability decreased and scores for graphic similarity increased for both groups.	1. Small group sizes. 2. Agreement of 90% for 2 judges on 10% of entries. 3. Data collected from daily reading activities. 4. Miscues coded were substitutions, omissions, insertions, reversals or scrambled words. 5. Descriptive analysis.
Williamson & Young, 1974	30 readers at 5th-grade instruction level 10 from each of grades 4,5,6	1. Subjects made fewer graphophonemically similar miscues at their instructional level than at their frustration level. 2. They made more miscues which were fully acceptable semantically to the whole text on their instructional level than on their frustration level. 3. More miscues at the frustration level retained grammatical function than those made at the instructional level.	1. No mention of reliability or validity check. 2. Basal materials and science texts. 3. No description of what constituted miscues. 4. Descriptive analysis.

words, morphological clues and word order. At the same time, many nouns and verbs are left in the passage to signal lexical meaning (Rankin, 1974). There is general agreement that a cloze test should have at least 50 deletions from a passage which is at least 250 words long (Oller, 1979; Rankin, 1965) and blanks should be equal in length. Many researchers have left the first and last sentences intact (Oller, 1979).

In scoring the cloze passages quantitatively, it is generally accepted that counting only exact word replacements is to be preferred over allowing synonyms to be counted as correct. Exact word scores have been shown as valid but less subjective and cumbersome as synonym scoring (E. Jongsma, 1971; Oller, 1979; Rankin, 1965).

Within the last ten years, researchers have increasingly investigated the qualitative aspects of text processing. A psycholinguistic analysis is made of each non-exact word replacement. Scores are derived qualitatively in a manner similar to RMI scoring.

Quantitative Assessments

Measurement of Readability

Wilson Taylor (1953) is credited as the first to demonstrate the value of the cloze procedure as a measure of readability. In the first of two experiments, he compared cloze scores with two formulae, Flesch and Dale-Chall, to see if the readability rankings would be similar. Twelve junior

and senior undergraduates worked three cloze passages, all over 175 words long, during a 15 minute time length for each passage. Three deletion systems were used, a 10% random, every 10th word, and every 5th word.

The cloze scores consistently ranked the passages in the same order of difficulty as the two formulae. An analysis of variance yielded a highly significant difference among the cloze scores of the different passages ($p < .001$). All the deletion systems yielded the same ranking of passages, but a greater number of deletions tended to discriminate among subjects more efficiently.

For the second experiment, 72 undergraduates worked two of eight cloze passages. Eighteen subjects worked each passage. Three of the passages (from Erskine Caldwell, Gertrude Stein and James Joyce) were chosen "because their characteristics violated certain common assumptions about what sorts of language elements correlate highly with readability" (p. 431) and were expected to be rated improperly by the Flesch and Dale-Chall formulae.

As expected, the cloze procedure more adequately assessed the assumed "true" readability of the Caldwell, Stein and Joyce passages than the formulae. Both formulae ranked the Stein passage as the easiest of the eight passages. Flesch rated it "very easy" and Dale-Chall rated it as fourth- or fifth-grade level. The cloze procedure ranked it

as the next to the hardest, the hardest being the Joyce passage. The Dale-Chall formula ranked the Caldwell and Joyce passages more closely to the cloze rankings than did the Flesch formula.

The cloze procedure "appears to be a measure of the aggregate influences of all factors which interact to affect the degree of correspondence between the language patterns of transmitter and reader" (p. 432). The formulae, by comparison, measure only superficial aspects of the passages.

John Bormuth (1966) explored five basic problems toward the development of accurate readability formulae. Subjects constituted the entire enrollments in grades four through eight from a small city in California. The subjects were divided into five heterogeneous groups and each group worked 20 cloze passages (four from each of these areas: literature, history, geography, biology and physical science). The every fifth word deletion system was used on the 275 to 300 word passages. Five forms for each passage were made so that every word appeared as a deleted item in one of the forms, excluding first and last sentences.

Five major findings were reported. (a) Variables at word level ($p < .05$) and independent clause level ($p < .05$) correlated curvilinearly rather than linearly, as had been previously assumed in readability research. Bormuth asserted that curvilinearity may exist at the passage level and that

the .05 level of significance was not obtained because of the small number of passages. (b) Support was given for the practice of using the same readability formulae for students of varying reading abilities. Correlations between language variables and difficulty did not change as a function of reading ability. (c) Support to warrant the development of readability formulae designed to predict the difficulties of small language units such as words, independent clauses and sentences was obtained. Bormuth asserted that the validities of reading formulae (.5 to .7) would greatly improve if curvilinearity were dealt with. (d) Readability formulae utilize too few linguistic variables important to a precise prediction of passage difficulty. (e) The use of new, more sophisticated types of linguistic variables improved the prediction accuracy of passage difficulty to a .93 correlation. Bormuth demonstrated that the cloze procedure is a valuable instrument for measuring readability and, more importantly, a valuable research instrument for studying linguistic variables which affect comprehension and, therefore, affect passage readability. The cloze procedure has since been found to be the most valid way to measure the readability of passages when compared with formulae, multiple-choice methods and the Readability Graph (Fry, 1969; L. Miller, 1975).

Studies provide evidence that the cloze procedure is a valid and reliable measure of readability for primary level

students (Covington, 1967; Davies & Vincent, 1977; Gallant, 1964-1965; Thompson, 1974), intermediate level (Bennett, 1980; Bormuth, 1962-63, 1967, 1968; Droby, 1980; Jones & J. Pikulski, 1974, 1979; Liske, 1969; Rankin & Culhane, 1969; Stephens, 1972), junior high level (J. Cohen, 1975; Geyer & Carey, 1972; Hater, 1970), high school level (Beard, 1967; Dupius, 1976, 1980; Elliott & Wiles, 1980; Klein, 1980) and college level (Entin & Klare, 1978; Lindsey, Beck, Devlin, Luther & Marshall, 1979). Researchers have studied cloze as a test of readability for special students, such as mentally retarded students (Ramanauskas, 1972) and profoundly deaf students (La Sasso, 1979, 1980). Cloze was initially intended for determining the readability of written material, but researchers soon realized that the cloze procedure had "a very large number of potential research uses, both practical and theoretical" (Taylor, 1956, p. 42).

Measurement of Comprehension

Studies have produced evidence to establish reliability and concurrent validity of the cloze procedure as a measure of reading comprehension. Cloze has been extensively examined against standardized reading tests. Substantial correlations were found between cloze outcomes and the Armed Forces Qualification Test (Taylor, 1957), the Diagnostic Reading Survey (F. Greene, 1965), the Metropolitan Test (Gallant, 1964-1965, 1965), the Gates Reading Tests (Alexan-

der, 1969; Kirby, 1968) and the SRA Achievement Series (Davidson, 1980). Moderate correlations were found between cloze and the Diagnostic Reading Tests (Rankin, 1958) and the Iowa Test of Basic Skills (Lamb, 1979).

Several studies of elementary students have compared the cloze procedure with the Informal Reading Inventory (IRI). Significant correlations ($p < .01$) were found at the instructional level (Bell, 1978; Walter, 1973) and at the independent (base), instructional and frustrational levels (Jones & J. Pikulski, 1974, 1979; Ransom, 1968) obtained by cloze tests and IRI's. Other studies (not reporting levels of significance) concluded that cloze is an accurate measure for determining instructional levels (Herron, 1974; Nolan, 1978) and independent, instructional and frustration levels (Alexander, 1969).

A major criticism of the cloze procedure is the inconclusive evidence regarding construct validity (Alderson, 1978; E. Jongsma, 1971). Some researchers assert that cloze tests may be more a measure of factors other than comprehension, such as passage redundancy (W. Weaver & Kingston, 1963), perceptual abilities (Ohnmacht & Fleming, 1972; Ohnmacht, W. Weaver & Kohler, 1970; Readence, Baldwin, Bean & Dishner, 1980) and memory retrieval (Tuinman, 1972). Studies using cloze to measure intersentential comprehension have also raised questions (Kibby, 1980; Shanahan, Kamil & Tobin, 1982).

Others argue from their evidence for the construct validity of cloze as a test of reading comprehension (Bormuth, 1969; G. Henry, 1979; Horton, 1974-1975; N. Smith & Zinc, 1977).

Researchers using cloze have investigated the effects of certain variables on the reading comprehension of children. Studies aimed to find out if comprehension is affected by language variables such as sentence length (Coleman, 1962), sentence complexity (Bormuth, 1966), the similarity of oral and written patterns of language structure (Ruddell, 1965) and syntactic maturity (Di Stefano & Valencia, 1980). Other variables tested were reader interest (P. Henry, 1970), illustrations (Rankin & Culhane, 1970), test anxiety (Holmes, 1973), personalized stories (D. Neville & Hoffman, 1981) and reader self-concept (White & Elam, 1977). Still other investigations include cloze as a measure of the reader's ability to detect literary style (Bormuth & MacDonald, 1965), cloze as a measure of learning from reading (Cunningham & Tierney, 1979) cloze as a measure of listening comprehension (V. Smith, 1980) and cloze as a measure of English language proficiency (Aitken, 1977; W. Allen, 1980; Baldauf & Propst, 1978; Darnell, 1970; Hughes, 1981; Lowry & Marr, 1975; Ojerinde, 1980; Oller & Conrad, 1971; Oller & Inal, 1971).

The cloze procedure has led to the development and use of new test instruments. The reading-storage technique (Carver, 1974), multiple-choice cloze (Cranny, 1968, 1972-

1973; Entin & Klare, 1973; Jonz, 1976; O'Reilly & Streeter, 1977; Panackal & Heft, 1978), the maze technique (Guthrie, Seifert, Burnham & Caplan, 1974; J. Pikulski & E. Pikulski, 1977), matching cloze (Baldauf, Dawson, Prior & Propst, 1980; Baldauf & Propst, 1979; Propst & Baldauf, 1979), the language experience approach cloze (Balyeat & Norman, 1975) and the post oral reading cloze (Page, 1975) show promise as valid measures.

Qualitative Assessments

The psycholinguistic qualitative analysis of cloze responses has been used to research the psycholinguistic abilities of the deaf (Moores, 1968, 1970), the language processing of nonproficient adult readers (Schwenker, 1979) and to compare the performances of native and non-native speakers of English (Alderson, 1980). Most research using qualitative analysis compared the patterns of miscues made by school children at varying reading ability levels (Cambourne, 1977; M. Neville & Pugh, 1976; Pacheco, 1979, 1980). These and other studies of school children (Legenza & Elijah, 1979; Vaughan, Tierney & Alpert, 1977) will be more fully described.

Relationship of Cuing Systems

Joseph Vaughan, Jr., Robert Tierney and Madelon Alpert (1977) examined the relationship between the syntactic and semantic cuing systems in order to gain a better psycholin-

guistic perspective of reading comprehension. Each of 240 subjects from four grade levels (four, six, eight and eleven) and various ability levels (good, average and poor) worked two cloze tests (one passage of high interest and one passage of low interest) on their own grade level of readability.

The miscues were analyzed for syntactic and semantic appropriateness. Significant correlations ($p < .001$) were found between syntactically acceptable and semantically acceptable scores for both passage types across ability groups and grade levels. The authors concluded that a meaningful relationship exists between syntactic and semantic cuing systems in reading comprehension.

Miscue Patterns Within Reading Levels

Alice Legenza and David Elijah (1979) analyzed cloze miscues in order to find out if a consistent miscue pattern exists within independent, instructional and frustration reading levels. The subjects (75 second graders and 69 fourth graders) each completed one cloze passage. Scoring based on quantitative, exact word replacements was used for classifying the passages into the three reading levels. The miscues were then qualitatively analyzed.

Miscue patterns were found to exist according to reading level. Students from both grades working cloze passages at their independent level made significantly more semantically acceptable substitutions than illogical substitutions

($p < .001$). At the frustration level, students from both grades made significantly more illogical substitutions than semantically acceptable substitutions ($p < .001$).

Varying Reading Abilities

Mary Neville and A. K. Pugh (1976) analyzed the substitutions of 130 fifth-year students who were tested on listening and written cloze passages. The subjects were from lower middle-class homes in the north of England. Upper and lower ability groups were designated, based on the quantitative scores from a written cloze test, in order to compare performance of good and poor readers.

All subjects demonstrated an awareness of syntactic and semantic constraints. Results of the comparison showed that the upper group made more substitutions which were appropriate to the total context, and fewer appropriate only to preceding context on both tests than did the lower group. The opposite was true for the lower group. They tended to make substitutions appropriate to preceding context only. Neither finding was statistically significant.

Phyllis Pacheco (1979, 1980) analyzed the types of substitutions made by 410 ninth graders of varying reading abilities on cloze passages from three subject areas (English, health and social studies). The subjects were about 33% black and Hispanic and from a middle-class and poor community. They were divided into low, average and high ability

groups on the basis of Gates-MacGinitie Reading Test scores.

The higher groups made significantly more exact word replacements on all three cloze passages than the lower groups ($p < .05$). The higher groups made significantly more substitutions which were both syntactically and semantically acceptable on all passages than the lower groups ($p < .05$) except for the average group and the high group on the English passage. The lower groups made significantly more substitutions which were syntactically acceptable but semantically unacceptable at the story level than the higher groups ($p < .05$) except for the high and average groups on the social studies passage. Significantly more substitutions from lower groups were totally unacceptable than were the higher groups' on all passages ($p < .05$) except for the average group and the high group on the social studies passage. No significant differences were found between ability groups in the number of slang or nonstandard English substitutions.

Brian Cambourne (1977) found differences in above average, average and below average readers' response patterns in two studies. In the first study, a small group of third and fourth graders, classified as above average and below average readers by their teachers, worked cloze passages. A qualitative analysis of the "Not-Exact-Replacements" (NERs) showed graphophonic similarities between the two groups, but the above average readers' NERs were consistently rated

higher in quality. Their NERs tended to maintain syntactic acceptability, semantic acceptability, grammatical function and story meaning more than the below average readers' NERs. Additionally, some above average readers appeared to be using five "reading/language processes" which made them more efficient than other above average readers at supplying exact word replacements. The five processes identified were:

1. Referring back into the text to find a clue to meaning;

2. Referring ahead into the text to find a clue to meaning;

3. Real World Knowledge - i.e., the network of meanings and relationships already known about the topic/story being read;

4. Cumulative and logical build-up of story line i.e. monitoring the story/topic line to enable logical prediction;

5. Use of letter cues; i.e. replacements which are controlled by remaining orthographic cues (p. 9).

The second study was designed around stories which contained deletions based on the five reading/language processes. The subjects were 39 children selected from third through seventh grades. They were classified into ability groups of above average, average and below average based on teacher judgment. NERs were analyzed in two ways. They

were first analyzed according to RMI criteria; then, the categories of deletions based on the five reading/language processes were analyzed for maintaining whole story meaning.

Results of the first analysis showed that the more able readers used the graphophonic, syntactic and semantic cues more efficiently during silent reading than did the groups of lower abilities. The differences between groups were greater for syntactic and semantic acceptability than for graphophonic similarity. The second analysis showed that the groups of higher ability produced higher percentages of exact word replacements and NERs across the five reading/language process based deletions. The better readers were more able to control meaning at the whole story level whereas the less able readers focused attention to smaller units of meaning.

Summary

It can be stated that the cloze procedure is an effective reading research technique. Since 1953, the number of research papers using the cloze procedure has rapidly grown. By 1964, more than 50 research papers used this technique and by 1974, the listing grew to over 150 (Rankin, 1974). Buros, in 1978, listed 400. Earlier research focused on quantitative assessments. Recently, qualitative scoring of cloze responses has provided insights into the psycholinguistic nature of silent reading.

Chart 2

Summary of Research Using Cloze Procedure

Study	Subjects	Results	Editorial Comments
Cambourne, 1977	39 3rd-7th graders; 3 ability groups	1. Better able readers used grapho-phonic, syntactic and semantic cues more efficiently than less able readers. 2. The differences between groups were greater for syntactic and semantic acceptability than for graphophonic similarity. 3. The better readers controlled meaning at the whole story level, but less able readers focused attention to smaller units of meaning.	1. Subjects were classified according to teacher judgment. 2. No mention of reliability or validity check. 3. Materials of appropriate level were selected by teachers of the subjects. 4. Categories for substitutions described. 5. Descriptive analysis.
Legenza & Elijah, 1979	75 2nd graders 69 4th graders	Students working at their independent level made more semantically acceptable than illogical substitutions ($p < .001$) and more illogical than semantically acceptable substitutions at their frustration level ($p < .001$).	1. No mention of reliability or validity check. 2. Materials' readability equaled grade levels of subjects. 3. Categories of substitutions are described.
Neville & Pugh, 1976	136 5th-year students; upper or lower ability	1. The upper group made more substitutions which were appropriate to the total context than the lower group on listening and written cloze passages. 2. The lower group tended to make substitutions appropriate to preceding context only.	1. Subjects classified according to cloze quantitative scores. 2. Claims high reliability for scoring procedures using 3 judges. 3. Materials were modified forms of a standardized cloze comprehension test. 4. Categories for substitutions briefly described.

Study	Subjects	Results	Editorial Comments
			5. Findings not statistically significant.
Pacheco, 1979,80	410 9th graders: low, average, high ability	1. Higher groups made more exact word replacements on passages from 3 subject areas than the lower groups ($p < .05$). 2. The higher groups made more substitutions both syntactically and semantically acceptable than the lower groups on 2 out of the 3 passages ($p < .05$). 3. The lower groups made more substitutions syntactically acceptable but semantically unacceptable at the story level than the higher groups on 2 passages ($p < .05$). 4. More substitutions from lower groups were totally unacceptable than the higher group's on 2 passages ($p < .05$).	1. Subjects from a community of middle to low socio-economic status. 2. No mention of reliability or validity check. 3. Materials within the 5th-6th-grade level. 4. Categories for substitutions described.
Vaughan, Tierney & Alpert, 1977	240 4th-11th graders: classed good, average, low ability	Syntactically acceptable scores correlated with semantically acceptable scores across ability groups and grade levels on passages of low interest as well as high interest ($p < .001$).	1. Subjects classified according to standardized test scores. 2. Periodic reliability check among 3 judges indicated 90% agreement. 3. Materials' readability level equaled grade level of subjects. 4. Categories for responses described.

MISCUE ANALYSIS AND CLOZE PROCEDURE

Many reading scholars recognize the value of using RMI together with cloze for diagnosing oral and silent reading strategies and comprehension (Anderson, 1980; Aulls, 1979; Carey, 1979a,b; McLean, 1979; Myers, 1976; Page, 1974). Researchers have increasingly used miscue analysis and cloze procedure together for investigating the reading process. Some of these studies analyzed the cloze scores quantitatively, others qualitatively in the same manner as miscue analysis of oral reading.

Miscue Analysis and Quantitative Cloze

William Page (1965, 1977, 1979) used miscue analysis and the post oral reading cloze test (POC) together for studying aspects of reading comprehension. The POC is a cloze test administered immediately after an oral reading of the same passage and used as the measure of comprehension. The subjects for Page's three studies were 48 second, third, fourth and sixth graders selected from an urban school. The sample yielded 12 subjects per grade, 16 subjects per ability group and 24 subjects per sex. Each subject read and worked the POC over the same 278 word passage rated at the third- to fourth-grade level of readability.

In the first study, Page (1976) sought to find out if there is a relationship between comprehension and syntactically and semantically acceptable and unacceptable oral read-

ing miscues. He found no significant correlation between comprehension and syntactically and semantically acceptable miscues. There was a highly significant negative correlation ($p < .001$) between comprehension and syntactically and semantically unacceptable miscues for the total group, each sex group, the low ability group, and grade three. Correlation coefficients for the other grades were substantially negative but not statistically significant. Page concluded,

> Semantically and syntactically unacceptable oral reading errors predict comprehension performance as measured by a post oral reading cloze test and exhibit a consistent negative relationship to comprehension (p. 236).

In the next study, Page (1977) looked for a relationship between POC performance and comprehending performance. The percent of the sum of semantically acceptable miscues and successfully corrected unacceptable miscues made up the comprehending score. There was a significantly strong positive linear correlation ($p < .001$) between POC scores and comprehending scores for the total group. Significant correlations were found for the average ability group and grade two ($p < .05$). POC means for ability groups and grade levels indicated a curvilinear relationship.

For the third study, Page (1979) examined the correlation between oral reading miscue patterns and comprehension as measured by POC. The percent of successfully corrected miscues exhibited a nearly significant correlation with com-

prehension ($p < .066$). Two ratios of miscue behavior were shown to be significant indicators of comprehension. They were the percent of successfully corrected miscues over the percent of uncorrected semantically unacceptable miscues ($p < .01$) and the percent of successfully corrected miscues over the percent of uncorrected miscues plus unsuccessfully corrected miscues ($p < .05$). Four correction behaviors were rejected as indicators of comprehension.

Robert Carey (1979a) also used miscue analysis and POC to study the effects of semantically acceptable miscues and correction behavior on comprehension. The subjects were 100 students in grades six through nine, from a suburban Rhode Island school district, who were selected by a stratified random sampling procedure. Five degrees of semantic acceptability and four types of correction behavior for the miscues were examined. Carey found a significant relationship (level not reported) between reading comprehension and miscue patterns based on the degree of semantic acceptability and correction behavior.

> The data further suggest that the miscue types studied can be hierarchically arranged according to a theoretical altercue continuum; i.e., some types positively predict comprehension, others negatively predict comprehension, and several types display entropic characteristics (p. 6679-A).

June Glenn (1977) used miscue analysis, POC and PSC (post silent reading cloze) to examine the effect of oral

and silent reading on miscues and comprehension. Subjects were 39 average fourth-grade readers randomly selected from six city schools in Anaheim, California. They were randomly assigned to three treatment groups. Group A read a story orally and worked the POC. Group B read the story silently before reading it orally and worked the POC. Group C read the story silently, worked the PSC, then read it orally. Group B scored significantly higher than Group C in semantic acceptability and strength in grammatical relationships (levels of significance not reported). Groups A and C scored significantly higher than Group B in the RMI comprehension loss category. Group B scored significantly higher than Groups A and C on the post reading cloze tests. No significant differences were found among the groups in miscue quantity.

Mervin Thornton (1974) examined the oral reading behavior and comprehension of eight fifth-grade students who used a Ludington Reading Room (providing a wide selection of paper-back books) and eight fifth-grade students who did not. The subjects were selected because their scores were slightly below average on the Stanford Diagnostic Reading Test. Each subject read orally two stories, one with a specific purpose set for its reading and one with no purpose set. After each oral reading, subjects worked a cloze test based on the story, as a measure of comprehension.

The findings showed that the students who used the reading room produced more acceptable and meaningful structures and used more efficient correction strategies than the ones who did not. An interference phenomenon seemed to upset the reading process when a specific purpose was set for reading. Miscues were lower in quality and correction strategies were less efficient in the purposeful reading situation. Reading for a specific purpose did not increase comprehension for the Reading Room Group. Purposeful reading increased comprehension for the Non-Reading Room Group to the level of the Reading Room Group.

Linda Pratt (1978) used the RMI and the cloze test to compare the Guided Reading Activity (GRA) to the Unguided Reading Activity (URA), with respect to their effects on the reading process. Subjects were 24 first graders from public schools in Amherst, Massachusetts. They were divided into two treatment groups with reading abilities varying from average to high. One group read in the GRA context, the other group as an URA.

No significant differences were found between the two groups. Pratt concluded that the GRA has little or no effect on the reading process or comprehension.

Miscue analysis together with the cloze procedure has also been used as a self diagnostic tool for students (Weed, 1980; Williamson & Randolph, 1973). In most of the research

where quantitative cloze tests have been used together with miscue analysis, the cloze test was in the form of a post test over an orally read passage, and it served as a comprehension test. Researchers looked for correlations in oral reading strategies and comprehension.

Miscue Analysis and Qualitative Cloze

Peter Rousch (1973) investigated the effect of prior conceptual knowledge on oral and silent miscues by using miscue analysis and the cloze procedure. Quantitative and qualitative scores were used from the cloze tests. Twenty-eight average fourth-grade readers were classified as having high or low concept awareness based on an illustrative pre-tested task.

The readers with high concept knowledge were better able to process syntactic and semantic information in both situations than the readers with low concept knowledge. Prior concept knowledge appeared to be related to comprehending scores but not to quantitative cloze scores. The cloze tests scores did not correlate with oral reading grammaticality or comprehending scores.

Sybil Robison (1972) hypothesized that a significant relationship existed between a black child's dialect miscues and spelling errors, and that black female children would make fewer phonetic and spelling errors than black male children. Subjects were 51 boys and 53 girls. Five types of

oral and written response combinations were measured, and there were seven categories of speech and orthography errors.

All the variables tested interacted significantly with each other (levels not given). The most frequent response types were phonetic oral miscues with phonetic spelling and correct speech with correct spelling. The greatest source of oral phonetic error of all the categories was improper plural endings.

M. E. Dolqueist (1977) compared the reading behavior of disabled fourth-grade readers reading at the second-grade level with that of average second-grade readers and average fourth-grade readers (sample not specified). Each group read and worked material one grade level above their reading level. Oral and cloze responses were qualitatively analyzed and classified according to six categories of syntactic and semantic acceptability.

No significant differences were found between fourth-grade disabled readers and average second or fourth graders in syntactic and semantic acceptability of oral miscues. Some significant differences, however, were found between the average fourth and second graders, which indicated that the average fourth graders were more efficient users of syntactic and semantic cues. There were significant differences among all three groups in their use of syntactic and semantic strategies on the cloze procedure (levels not reported). The

average fourth graders were superior to the second graders and the fourth-grade disabled readers. Significant differences between the fourth-grade disabled readers and the second graders favored the fourth-grade disabled readers. All three groups appeared to use semantic constraints to a greater extent on the cloze procedure than they did during oral reading.

Margaret Lindberg (1977) used cloze and miscue analysis as psycholinguistic measures of readability to compare with two linguistic measures (Moir's Word-Content Ratio and the Botel-Granowsky Syntactic Complexity Formula) and two prelinguistic measures (the 1958 Dale-Chall and the Fry Readability Graph). Subjects were 24 average fourth-grade readers selected on the basis of teacher judgment and standardized test scores. The cloze responses of eight subjects who worked five fourth-grade basal reader stories each, were compared to the oral miscues of 16 other subjects over the same stories.

All of the readability measures placed the stories within one grade level of fourth grade. None of the measures agreed with publisher judgment on the ranking of the stories according to difficulty. Only cloze and miscue analysis provided in-depth conceptual, linguistic and cultural data for selecting materials. The non-identical cloze responses appeared to indicate language processing strategies similar to

non-expected oral responses.

Sean Farren (1977) studied and compared the miscue patterns made in oral and silent reading. Eleven boys (ages 12 to 14), who had been in remedial reading classes since primary school, made up the sample. Miscue analysis was used to test oral reading and cloze procedure to test silent reading. The subjects made a total of 284 oral reading miscues and 495 cloze errors. Both miscues and cloze errors were analyzed according to Goodman's (1969) Taxonomy of Cues and Miscues in Reading.

The two tests produced similar results. Both miscues and cloze errors tended to be either quite proximate (graphically, syntactically and semantically) or not very proximate at all to the expected response. Results from both tests indicated that the readers were able to appropriately respond to syntactic cues but were generally weak in responding to semantic cues. Their greatest weakness was in responding to graphic cues especially the post-initial parts of words.

R. Ann Zinck (1978) examined the relationship between syntactic and semantic cues to comprehension in oral and silent reading. The subjects were 68 seventh graders from a rural area of northeast Georgia who were reading between one and four years below grade level. The Reading Comprehension subtest of the Stanford Diagnostic Reading Test (SDRT; measure of literal and inferential comprehension), a cloze test

(scored both quantitatively and qualitatively) and an oral reading passage (scored qualitatively) were administered to each subject.

Syntactic and semantic cloze scores did not predict quantitative cloze scores. A significant relationship was found between quantitative cloze scores and total SDRT scores ($p < .01$). Syntactic and semantic scores from neither test could consistently predict literal or inferential comprehension. First syntactic then semantic cloze scores were better predictors of literal comprehension than oral miscue scores. Semantic oral miscue scores were the best predictors of inferential comprehension.

Most of the studies using miscue analysis and qualitative cloze together compared the psycholinguistic strategies of subjects during oral and silent reading. Together, they have also been used to obtain a psycholinguistic description of deaf children reading sign language (Ewoldt, 1981). These studies have provided insights into the reading behaviors of disabled and average readers.

Chart 3

Summary of Research Using Miscue Analysis and Cloze Procedure

Study	Subjects	Results	Editorial Comments
Carey, 1979a	100 6th-9th graders	There is a significant relationship between reading comprehension and reading strategies, i.e., semantic acceptability and correction behavior.	1. Stratified random sampling procedure. 2. No mention of reliability or validity check. 3. No description of materials. 4. No description of what constituted miscue. 5. No levels of significance reported.
Dolqueist, 1977	Disabled 4th graders (2nd-grade level) Average 2nd-grade readers Average 4th-grade readers	1. Miscue analysis showed that average 4th graders used syntactic and semantic cues more efficiently than average 2nd graders, but showed no significant differences between 4th-grade disabled readers and average 2nd or 4th graders' syntactic and semantic cue use. 2. Qualitative cloze showed that average 4th graders were superior to disabled 4th graders and average 2nd graders in syntactic and semantic cue use and disabled 4th graders were superior to average 2nd graders. 3. All groups appeared to use semantic constraints to a greater extent on the cloze procedure than during oral reading.	1. Sample size not specified. 2. No mention of reliability or validity check. 3. Materials one grade level above the reading level of each group. 4. No description of what constituted miscues. 5. No levels of significance reported.

Study	Subjects	Results	Editorial Comments
Farren, 1977	11 remedial readers (boys 12-14 years old)	Both tests showed that the readers used syntactic cues best; they were generally weak in responding to semantic cues and their greatest weakness was graphic cue use.	1. Small sample size. 2. No mention of reliability or validity check. 3. Materials equaled reading levels of the subjects. 4. Substitutions, omissions, insertions and mispronunciations.
Glenn, 1977	39 average 4th graders 3 treatment groups	Subjects who read a story silently before reading it orally scored significantly lower in comprehension loss and higher on the cloze test than students in the other two groups. They scored significantly higher than one group in semantic acceptability and strength in grammatical relationships.	1. Random sampling procedure. 2. No mention of reliability or validity check. 3. No description of what constituted miscues. 4. No levels of significance reported.
Lindberg, 1977	24 average 4th graders	Only the psycholinguistic measures of readability provided in-depth conceptual, linguistic and cultural data when compared with linguistic measures and pre-linguistic measures.	1. Subjects chosen on the basis of teacher judgment and standardized test scores. 2. No mention of reliability or validity check. 3. Materials from 4th-grade basals. 4. No description of what constituted miscue. 5. Descriptive analysis.
Page, 1976	48 students: 12/grades 2,3,4,6	1. There was no significant correlation between cloze scores and syntactically and semantically acceptable miscues.	1. Sample selected from one urban school based on various sources of available information.

Study	Subjects	Results	Editorial Comments
	16/ability groups: high, average, low 24/sex	2. A negative correlation ($p < .001$) existed between close scores and syntactically and semantically unacceptable miscues for the total group, each sex group, the low ability group and 3rd grade.	2. No mention of reliability or validity check. 3. Same materials (3-4 grade level) used for all subjects. 4. No description of what constituted miscues.
Page, 1977	Cf. Page, 1976	There was a positive correlation ($p < .001$) between close scores and comprehending scores for the total group, average ability group ($p < .05$) and 2nd grade ($p < .05$).	Cf. Page, 1976.
Page, 1979	Cf. Page, 1976	Two ratios of miscue behavior correlated significantly with close scores; the percent of successfully corrected miscues over the percent of uncorrected semantically unacceptable miscues ($p < .01$) and the percent of successfully corrected miscues over the percent of uncorrected miscues plus unsuccessfully corrected miscues ($p < .05$).	Cf. Page, 1976.
Pratt, 1978	24 1st graders; 2 groups varying from average to high ability	No significant differences were found between the group that read in the Guided Reading Activity context and the group that read uninterruptedly.	1. Small group sizes. 2. No mention of reliability or validity check. 3. No description of materials. 4. No description of what constituted miscue.
Robison, 1972	51 boys (black) 53 girls (black)	All the variables tested, seven categories of dialect miscues and spelling errors, interacted significantly with each other.	1. No mention of reliability or validity check. 2. No description of materials.

Study	Subjects	Results	Editorial Comments
			3. No description of what constituted miscues. 4. No levels of significance reported.
Rousch, 1973	28 4th graders classed as high or low concept awareness	The readers with high concept awareness were better able to process syntactic and semantic information during both tasks than the readers with low concept awareness.	1. Subjects were chosen based on I.Q. and classified according to illustrative tasks. 2. No mention of reliability or validity check. 3. No description of materials. 4. No description of what constituted miscues. 5. No levels of significance reported.
Thornton, 1974	8 5th graders who used a Ludington Reading Room 8 5th graders who did not	1. The students who used the reading room produced more acceptable and meaningful structures and used more efficient correction strategies than the ones who did not. 2. Reading for a specific purpose did not increase close scores for the Reading Room Group but increased scores for the Non-Reading Room Group to the level of the Reading Room Group.	1. Small sample size. 2. No mention of reliability or validity check. 3. Fiction and non-fiction test materials. 4. No description of what constituted miscues. 5. Descriptive analysis.
Zinck, 1978	68 7th graders of low ability	1. There was a relationship between quantitative close scores and the comprehension subtest of a standardized test ($p < .01$).	1. Subjects chosen from one school based on an achievement test score. 2. No mention of reliability or validity check.

Study	Subjects	Results	Editorial Comments
		2. Syntactic and semantic scores from neither close nor miscue analysis could consistently predict literal or inferential comprehension. 3. First syntactic then semantic close scores were better predictors of literal comprehension than oral miscue scores. 4. Semantic oral miscue scores were the best predictors of inferential comprehension.	3. No description of materials. 4. No description of what constituted miscues.

SUMMARY

Miscue analysis and the cloze procedure are research tools that separately and together have been used to examine the psycholinguistic nature of reading. Miscue analysis and the RMI were specifically developed for the purpose of observing and testing the psycholinguistic process during oral reading. Watson's (1980) reader selected miscue activity has been used in the classroom as an instructional tool for monitoring miscues during silent reading (see above p. 19), however, it has not developed into a research tool. The cloze procedure was first developed as a measure of readability and comprehension. Soon after its development, however, researchers realized its potential as an instrument for studying linguistic and psycholinguistic variables. Miscue analysis and cloze procedure together are used increasingly to compare oral reading strategies and comprehension and to compare the psycholinguistic strategies of the oral and silent reading processes.

CHAPTER III

PROCEDURES

The Population and Sample

The subjects for the present study were selected from the population of third graders with high and average reading ability and sixth graders with high and low reading ability in a suburban school district adjacent to a large metropolitan city in the Southwest. Two schools were chosen for the study by the district coordinator after the investigator and her advisor had petitioned the district. All of the third-grade sample came from one elementary school in a high-middle socioeconomic community. The sixth-grade sample came from one school in a middle socioeconomic community (see Appendix A for letters of permission from the principals). Both groups were from an open classroom environment, i.e., classes within the grade level were not separated by walls. The teachers were asked to provide lists of 15 students from their grade level who had high reading ability and 15 with low reading ability. Teacher judgment was based on their observation and information from student files, such as test scores, which were unavailable to the investigator.

The Passage Comprehension subtest of the Woodcock Reading Mastery Tests (1974) was then administered to the 60 students recommended on the teacher lists to serve as a further

check and control of the high and low ability samples. Samples of poor readers and good readers were to be randomly selected from the group that scored in the third and fourth stanines and the group that scored in the seventh, eighth and ninth stanines, respectively.

The Woodcock subtest is designed to be used with students from kindergarten through twelfth grade. This test was used for screening because it is an individualized test using passages (as were both experimental tasks in this study), and it is a modified cloze task (similar to one used in this study). The student silently reads a passage, from which one word is deleted, and produces aloud the word s/he thinks should go in the blank. Technically, the split-half reliability for all four of the Woodcock subtests ranges from .90 to .99. Content validity is based on selection of items from the domain of reading, and predictive validity is based on student performance on alternate test forms. No statement was made about concurrent validity.

From the initial list of 60, a sample of 40 subjects, ten for each ability group (high and low), were to be selected. However, the third-grade students, judged to have low reading ability by their teachers, were shown to have average reading ability according to the results of the Woodcock subtest. Those readers who had been identified as "low" by the teachers were classified as "average" for the investigation.

Therefore, ten subjects were selected for each ability group, high and low for sixth grade and high and average for third grade. Screening took place during the month of April for the third graders and May for the sixth graders. Sixth graders who scored in the third (seven subjects) and fourth (four subjects) stanines on the Woodcock subtest made up the sixth-grade low ability group (L6). The sixth-grade high ability group (H6) scored in the seventh (six subjects), eighth (three subjects) and ninth (one subject) stanines. The third graders who scored in the fifth (eight subjects) and sixth (two subjects) stanines on the Woodcock subtest made up the third-grade average ability group (M3), and those who scored in the seventh (three subjects), eighth (six subjects) and ninth (one subject) made up the third-grade high ability group (H3). There were an equal number of boys and girls in each third-grade subgroup. Both sixth-grade subgroups had six girls and four boys (see Appendix B for listing of students' Woodcock subtest scores).

Response Measures

Four stories from the Reading Miscue Inventory--Procedure for Diagnosis and Evaluation (Y. Goodman & C. Burke, 1972b) were selected for the study. This series of stories was compiled to use for miscue analysis, and it has been used in previous miscue research (Bean, 1978; Beebe, 1980; Love, 1979; Willekens, 1979; Wofford, 1974). Two stories for each

grade level were selected from the Goodman & Burke series on the basis of their difficulty measured by the Fry Readability Graph (1968). Readability was calculated for three samples of 100 words each taken from the middle of the stories. Two more samples were calculated for readability in stories which showed varied levels in the first three samples. One more difficult and one easier story were used for each grade. Neither story was beyond the difficulty of the current grade level so that, as Kibby (1979) cautioned, difficult material would not limit the child's reading strategies. The third-grade stories selected were "Name of the Tree" (second grade on Fry) and "War on Small Deer" (third grade on Fry). The sixth-grade stories were "Why the Parrot Repeats Man's Words" (fifth grade on Fry) and "First Kill" (sixth grade on Fry).

Each story was used in an oral reading test form and in a silent reading test form. The oral reading test was administered according to RMI procedures, i.e., the subject read the story unaided as the examiner marked the miscues on a copy of the text. The oral reading sessions were tape recorded. The silent reading test was a cloze test with 50 deletions (every seventh word) from the center of the story, the first and last portions remaining intact (Bormuth, 1966). All the blanks were 1½ inches long (fifteen spaces on a Pica typewriter, i.e. _____) following Bormuth's (1967) guidelines. The types of words deleted were balanced between

the number of lexical deletions (nouns, verbs and adjectives) and the number of structural deletions (prepositions, conjunctions, etc.) in each story (see Appendix C for stories in cloze format).

The treatment of the stories was counterbalanced. Half of each subgroup read one story as an oral test, the other half read the same story as a silent test. The half who read the one story as an oral test read the other story as a silent test and the half who read the one story as a silent test read the other as an oral test:

Third Grade	Cloze	Miscue
"Name of the Tree"	N(M3) = 5	N(M3) = 5
	N(H3) = 5	N(H3) = 5
"War on Small Deer"	N(M3) = 5	N(M3) = 5
	N(H3) = 5	N(H3) = 5
Sixth Grade	**Cloze**	**Miscue**
"First Kill"	N(L6) = 5	N(L6) = 5
	N(H6) = 5	N(H6) = 5
"Why the Parrot Repeats Man's Words"	N(L6) = 5	N(L6) = 5
	N(H6) = 5	N(H6) = 5

The test forms of the stories were randomly assigned to

the subjects. The order of treatment was also counterbalanced, with initial treatment selection randomly assigned.

Data Collection

The tests were administered to the 20 third graders during the last two weeks of April and to the 20 sixth graders during two weeks in the middle of May. Each subject was tested individually in two sessions on two separate days. On one day, s/he received the oral reading test and on another day the silent reading test in the order randomly determined in advance. Each subject was given as much time as necessary to complete the task. The average testing time was 20 minutes. All subjects except one completed each test in one session. The examiner excused an L6 subject during the silent reading test so that he could take part in a school activity. He completed the test immediately following the school activity. The examiner believed the subject would give a more representative performance if this concession were made in order to maintain the subject's positive attitude toward the task. Both schools provided a small quiet room where the examiner and subject could work alone.

Silent Reading Test

The subjects worked an easy sample cloze exercise to familiarize them to the task (see Appendix D). The same directions for the silent reading test were read to all the subjects (see Appendix E). They were encouraged to fill in

all the blanks with their best guess, even when they did not know an answer, and to do as well as they could on words they did not know how to spell. They were instructed not to erase when they wanted to change an answer but to draw a line through the word and write the new answer above it. This way correction strategies could be studied.

Oral Reading Test

All subjects were read the same directions (see Appendix E). They were informed that they would not be given any aid during the reading and were encouraged to do their best to figure out by themselves any words they did not know. Miscues were recorded by the examiner. The session was tape recorded for future reference. None of the subjects expressed fear of being recorded. A small portion was played back to the subjects to satisfy their curiosities.

Data Analysis

Each subject's taped oral recording was played and replayed to make sure that all miscues were noted. Cloze responses were checked to identify those responses which differed from the exact word that was deleted. Misspelled exact words were counted as correct if they were intelligible (Bormuth, 1966). Also, misspelled substitutions, when intelligible, were analyzed as the intended word.

The investigator designed a list of guidelines used for identifying cloze and miscue substitutions in order to in-

sure consistency (see Appendix F). She covered the data more than twice after writing the guidelines to make sure that all the substitutions were correctly identified. A sample of 25 miscue/cloze substitutions were taken from the middle of the reading passage, the section that was mutilated for the cloze test, to be analyzed. Y. Goodman (1973) has suggested that a sample of 25 miscues of all kinds (substitutions, omissions and insertions) is an adequate representation of the strategies used by a subject. Sampling 25 miscue/cloze substitutions, therefore, should provide a valid assessment of substitution strategies. By analyzing substitution miscues only, the oral reading measure is more equated with the silent reading measure which necessarily involves analyzing substitutions only, by nature of the task. D'Angelo (1980) found that insertions and omissions accounted for less than three percent of the miscues which distorted semantics or syntax and concluded that "coding and interpretations can be simplified and attention can be focused on substitutions which yield more information about reading difficulty" (p. 4).

The investigator selected the sample beginning with the same sentence in which the blanks began in the cloze test and included every cloze or miscue substitution until a sample of 25 was obtained. For those subjects who made less than 25 cloze or miscue substitutions in the designated sec-

tion, the investigator selected from the pages preceding and the pages following that section, working outward until the sample of 25 cloze or miscue substitutions was obtained. All the cloze or miscue substitutions were analyzed if the subject made 25 or less.

After all the substitutions, both cloze and miscue, were identified and selected, a modified version of Cambourne's taxonomy (1977) was used for analysis. Each miscue and cloze substitution was judged along five dimensions: (a) Grammatical Function; (b) Syntactic Acceptability; (c) Semantic Acceptability; (d) Meaning Loss; and (e) Correction. The first four of these came directly from Cambourne's taxonomy (1977, p. 6a), and the final dimension was styled after one of Y. Goodman's and C. Burke's nine RMI questions (1972a). The appropriateness of each miscue/cloze substitution was evaluated along a continuum within each dimension as follows:

Dimension	Question Asked	Continuum	
Grammatical Function	Does the reader's replacement serve the same grammatical function as the intended word(s)?	Y	Yes
		N	No
		P	Cannot tell.
Syntactic Acceptability	Does the reader's replacement result in a syntactically acceptable construction?	Y	Yes, the complete T-unit is acceptable.
		P	Yes, but at sub T-unit level.
		N	No, syntactically unacceptable.

Dimension	Question Asked	Continuum	
Semantic Acceptability	Does the reader's replacement result in a semantically acceptable construction?	Y	Yes, at the whole story level.
		T	Yes, but only at T-unit level.
		P_1	Yes, but only at sub T-unit level with prior portion of the sentence.
		P_2	Yes, but only at sub T-unit level with following portion of the sentence.
		N	No, totally unacceptable.
Loss of Meaning	Does the reader's replacement result in a loss of meaning?	N	No. There is no loss in meaning at the whole story level.
		P	Change of unimportant detail.
		M	Change in major character, incident or sequence.
		Y	Yes. Totally incongruous to the story.
Correction	Is the miscue corrected?	Y	Yes. The miscue is corrected.
		P	The attempt at correction is unsuccessful or a correct response is abandoned.
		N	No. There is no attempt at correction.

The investigator went through the entire process for each substitution at least four times. The first time, she went through it question by question, i.e., she analyzed all the cloze/miscue substitutions of each student, asking the first question about grammatical function, then all the cloze/miscue substitutions from each student, asking the second question about syntactic acceptability, etc. The second time, she went through each story one sentence at a time and fully analyzed (using all five questions at one time) all the cloze and miscue substitutions that were made in that sentence. The investigator's first draft of "Guidelines for Analysis of Miscues and Cloze Responses" (see Appendix G) was completed after the second time through the data. Then a third time, in the same manner as the second, she analyzed the data in order to insure consistency and refine the guidelines. After the fourth time, the investigator was satisfied that the analysis was consistent.

For a reliability check, a second judge identified and analyzed cloze/miscue substitutions from the tests of eight (four from each grade level) randomly selected subjects (five percent of the total sample). The second judge earned an M.A. in English from Edinboro State College and taught senior high school level English in an accredited private school for three years. She was trained how to mark miscues by the investigator using "Evaluating Oral Reading," a sec-

tion from "Analyzing Retelling and Oral Reading-Adaptations of the Reading Miscue Inventory" (Griffin & K. Jongsma, 1980) supplemented by "Symbols, Abbreviations, and Other Marks Used in Miscue Research" from Findings of Research in Miscue Analysis: Classroom Implications (Allen & Watson, 1976). The second judge identified and analyzed cloze and miscue substitutions using the investigator's "Guidelines for the Identification of Substitutions," and "Guidelines for Analysis of Miscues and Cloze Responses." There was a 100% agreement between judges on the total number of miscues made, an 88.6% agreement on the number of miscue substitutions, and 99.5% on the number of cloze substitutions. Agreement on data analysis was 95.3% for Grammatical Function, 82% for Syntactic Acceptability, 73.9% for Semantic Acceptability, 59.7% for Meaning Loss, and 96.9% for Correction. Although the Semantic Acceptability and Meaning Loss categories show lower agreements, they are consistent with other studies which have reported reliabilities for each category of scores. Hood (1975-1976) found high reliabilities between judges for Meaning Loss scores but, unlike the present study, those scores were derived from a computation of certain types of uncorrected miscues. Her Meaning Loss scores and the Meaning Loss scores of the present study, therefore, are not comparable assessments. The derivation of Meaning Loss and Semantic Acceptability scores for the

present study were more comparable to Hood's (1975-1976, 1982) evaluating the degree of contextual appropriateness because the present investigator derived Meaning Loss scores based on the degree of contextual appropriateness at the story level, and Semantic Acceptability on the degree of contextual appropriateness at the sentence or story level. Between judge scores for contextual appropriateness yielded Alpha reliabilities of .52 to .77 for one judge and .84 to .94 for five judges (Hood, 1975-1976), .56 to .70 for three judges (Kendall & Hood, 1979) and .59 to .74 for three judges (Hood, 1982). Those coefficients show similar reliabilities as the present study for contextual appropriateness scores, 59.7% agreement and 74.9% agreement. The present investigator and the second judge discussed the analysis and the percentage of agreement for Meaning Loss and concluded that there was difficulty in drawing lines between the top two ("N" and "P") and bottom two categories ("M" and "Y") of the continuum. There was an 83.7% agreement between judges for Meaning Loss when the top two categories were collapsed into one ("N + P," no major meaning loss) as well as the bottom two ("M + Y," major meaning loss).

The investigator tabulated the percentage of cloze/miscue substitutions falling into each category along the continuum. All research questions were answered descriptively, rather than statistically, and trends in the data were

reported. Data were summarized in tabular form, by dimension. The following questions were addressed for each student, for each grade level grouping (third and sixth), and for each ability group at each grade level (H3, M3; L6, H6):

(1) What percent of the cloze/miscue substitutions serve the same grammatical function as the author's intended word?

(2) What percent of the cloze/miscue substitutions result in a syntactically acceptable construction?

(3) What percent of the cloze/miscue substitutions result in a semantically acceptable construction?

(4) What percent of the cloze/miscue substitutions result in a loss of meaning?

(5) What percent of the cloze/miscue substitutions are corrected?

(6) What trends are observed in the cloze and miscue substitutions in the above five areas for students at two grade levels at differing levels of reading ability?

CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA

The purpose of this study was to find out if a psycholinguistic analysis of oral and silent reading dimensions would indicate that the processes are different. This study also sought to determine if those processes differ for third and sixth graders, and for readers of high and average proficiency levels at the third-grade level and for readers of high and low proficiency levels at the sixth-grade level. The data are presented under five headings, the five dimensions along which the cloze and miscue substitutions were analyzed. All numerical data are reported in percentages.

Grammatical Function

What percent of the cloze/miscue substitutions serve the same grammatical function as the author's intended word?

Composite Group

Table 1 shows that percentages were similar between cloze and miscue along each level of the continuum for Grammatical Function. On both cloze and miscue passages, the highest percentage of substitutions (over 60%) had the same grammatical function as the text word. A very small percentage of the substitutions' grammatical functions could not be determined (under 1% on both tests).

The percentage of substitutions that changed the gram-

matical function was also similar (30.84, cloze; 34.82, miscue). The similarities and tendencies observed in the composite table continue across grade level and ability groups.

Table 1

The Percentage of Cloze/Miscue Substitutions That Served the Same Grammatical Function for Composite Group

	Cloze	Miscue
Y	68.46	64.47
P	.70	.71
N	30.84	34.82

Grade Level Groups

The Grade Three and Grade Six percentages from Table 2 closely resemble the Composite table. All trends and similarities on the cloze and miscue passages mentioned under "Composite" can also be said of both grade levels.

Table 2

The Percentage of Cloze/Miscue Substitutions That Served the Same Grammatical Function for Grade Level Groups

Grade 3		Grade 6	
Cloze	Miscue	Cloze	Miscue
Y 70.13	64.95	Y 67.09	64.07
P .26	.51	P 1.06	.87
N 29.61	34.54	N 31.85	35.06

Ability Groups

There were some percentage differences observed among ability groups, although scores showed the same general tendencies as the Composite group (Table 3). The two groups of high ability made higher percentages of substitutions which retained grammatical function (H3, 78.88, cloze; 71.79, miscue; H6, 80.09, cloze; 68.40, miscue) than the two groups of middle and lower ability (M3, 63.84, cloze; 60.35, miscue; L6, 55.60, cloze; 60.40, miscue).

Table 3

The Percentage of Cloze/Miscue Substitutions That Served the Same Grammatical Function for Ability Groups

H3		M3	
Cloze	Miscue	Cloze	Miscue
Y 78.88	71.79	Y 63.84	60.35
P 0	0	P .45	.86
N 21.12	28.21	N 35.71	38.79
H6		**L6**	
Cloze	Miscue	Cloze	Miscue
Y 80.09	68.40	Y 55.60	60.40
P 0	1.41	P 2.00	.40
N 19.91	30.19	N 42.40	39.20

The two scores for H6 differed more widely than for the other groups. More than 10 percentage points separated cloze and miscue scores at both poles of the continuum for Group H6, about seven percentage points for Group H3, and under five percentage points for the groups of middle and lower ability.

Scores for substitutions retaining grammatical function for all groups, except L6, were slightly higher on cloze

than on miscue. The same pattern was seen of nine subjects from Group H6, seven from H3, six from M3 and three from L6 (see Appendix H). All subjects made a higher percentage of substitutions which retained grammatical function and a lower percentage which did not except four students in M3 (Subjects 13, 14, 16 and 18 on miscue) and three students in L6 (Subject 15 on miscue and Subjects 18 and 19 on cloze).

Syntactic Acceptability

What percent of the cloze/miscue substitutions result in a syntactically acceptable construction?

Composite Group

The composite percentages on Table 4 show similarities between cloze and miscue passages on syntactic acceptability. The highest percentage of substitutions was syntactically acceptable to entire T-units on both cloze (76.52) and miscue (70.24) passages.

Table 4

The Percentage of Cloze/Miscue Substitutions That Resulted in a Syntactically Acceptable Construction for Composite Group

Cloze	Miscue
Y 76.52	70.24
P 16.82	20.94
N 6.66	8.82

The lowest percentage of substitutions was unacceptable to the entire T-unit on both tests (6.66, cloze; 8.82, miscue). Few substitutions were acceptable to only a portion of the T-unit (16.82, cloze; 20.94, miscue). Those tendencies continued across grade level groups and ability groups (Tables 5 and 6). The cloze score was slightly higher than the miscue score in the category of totally acceptable substitutions, and slightly lower in the other categories on the continuum, a tendency observed across grade level (except Grade 3, category P) and ability levels (except M3, categories Y and P).

Grade Level Groups

Grade Three and Grade Six percentages (Table 5) reflect the same generally observed tendencies in the Composite table.

Table 5

The Percentage of Cloze/Miscue Substitutions That Resulted in a Syntactically Acceptable Construction for Grade Level Groups

Grade 3		Grade 6	
Cloze	Miscue	Cloze	Miscue
Y 76.10	74.74	Y 76.86	66.45
P 18.44	17.53	P 15.50	23.81
N 5.46	7.73	N 7.64	9.74

The major differences between the grade level groups were on miscue scores at the top and middle points of the continuum. The Grade Three group made a higher percentage of totally acceptable substitutions (74.74 versus 66.45) and a lower percentage of partially acceptable substitutions (17.53 versus 23.81) than the Grade Six group. A glance at the ability group table (Table 6) reveals that those differences are strongly influenced by scores in Group L6.

Ability Groups

All of the ability groups (Table 6) show the same general tendencies as the Composite table. The high ability groups, however, made higher percentages of totally acceptable substitutions (scores ranged from 76.89 to 88.24) than

the two groups of middle and lower ability (scores ranged from 57.60 to 72.41). H3 and H6 scores were very similar to each other. The low ability group (L6) scored the highest percentages of totally unacceptable substitutions and scored at least 14 percentage points lower than all the other groups in making syntactically acceptable substitutions on miscue.

Table 6

The Percentage of Cloze/Miscue Substitutions That Resulted in a Syntactically Acceptable Construction for Ability Groups

H3		M3	
Cloze	Miscue	Cloze	Miscue
Y 88.20	78.20	Y 67.41	72.41
P 9.32	17.31	P 25.00	17.67
N 2.48	4.49	N 7.59	9.91
H6		**L6**	
Cloze	Miscue	Cloze	Miscue
Y 88.24	76.89	Y 66.80	57.60
P 9.95	17.92	P 20.40	28.80
N 1.81	5.19	N 12.80	13.60

The high ability groups made lower percentages (below 10%) of partially acceptable substitutions on cloze than the middle and low ability groups (above 20%). All subjects in H3 and H6 (except Subject Six) and seven subjects in L6 made higher percentages of totally acceptable substitutions on cloze than on miscue (see Appendix H), a group tendency mentioned above under "Composite."

Semantic Acceptability

What percent of the cloze/miscue substitutions result in a semantically acceptable construction?

Composite Group

A similar distribution of scores over the continuum for both tests was observed from the composite percentages (Table 7). Percentages were highest for substitutions acceptable at the whole story level (58.88, cloze; 43.18, miscue) and were well above the other scores on both tests. Cloze and miscue percentages differed in their second and third highest scored categories on the continuum. On cloze, the second highest was substitutions acceptable with prior T-units (17.99), followed by percentage of totally unacceptable substitutions (9.93). Conversely, on miscue, the second highest percentage was totally unacceptable substitutions (23.06), followed closely by substitutions acceptable with prior T-units (20.35). Cloze and miscue percentages were nearly identical for the two lowest scored categories on the continuum,

substitutions semantically acceptable only at the T-unit level (8.18, cloze; 8.59, miscue) and substitutions acceptable only with the following portion of the T-unit (5.02, cloze; 4.82, miscue). The grade level groups (Table 8) and ability groups (Table 9) follow that basic trend, with the exception of L6 miscue percentages and the variability of percentages through groups in the "N" category (3.10 to 37.20).

Table 7

The Percentage of Cloze/Miscue Substitutions That Resulted in a Semantically Acceptable Construction for Composite Group

	Cloze	Miscue
Y	58.88	43.18
T	8.18	8.59
P_1	17.99	20.35
P_2	5.02	4.82
N	9.93	23.06

Cloze percentages were substantially higher than miscue percentages for substitutions that were acceptable at the story level (58.88 versus 43.18) and substantially lower than miscue percentages for totally unacceptable substitutions (9.93 versus 23.06). Both trends hold true for all

ability groups and grade level groups.

Grade Level Groups

Both the Grade Three and Grade Six percentages (Table 8) suggest that same general trends in the distribution over the continuum as the Composite table. Grade Three students

Table 8

The Percentage of Cloze/Miscue Substitutions That Resulted in a Semantically Acceptable Construction for Grade Level Groups

Grade 3		Grade 6	
Cloze	Miscue	Cloze	Miscue
Y 62.60	52.32	Y 55.84	35.50
T 8.05	9.54	T 8.28	7.79
P_1 17.40	16.49	P_1 18.47	23.59
P_2 4.94	3.35	P_2 5.10	6.06
N 7.01	18.30	N 12.31	27.06

made higher percentages of substitutions acceptable at the story level than Grade Six students (62.60, cloze; 52.32, miscue; versus 55.84, cloze; 35.50, miscue) and lower percentages of totally unacceptable substitutions (7.01, cloze; 18.30, miscue; versus 12.31, cloze; 27.06 miscue). Grade Three students also made lower percentages of partially un-

acceptable substitutions on miscue (16.49, 3.35 versus 23.59, 6.06 for P_1 and P_2 respectively).

Ability Groups

Table 9 suggests the same general distribution of percentages over the continuum for ability groups as the Composite group, with the exception of L6 on miscue. The highest percentage of L6's substitutions on miscue were totally unacceptable. All other groups scored highest in the category of substitutions acceptable at the story level.

The high ability groups excelled in their performances on cloze, making very high percentages of substitutions acceptable at the story level (H3, 81.99; H6, 77.38) and very low percentages of totally unacceptable substitutions (H3, 3.10; H6, 3.62).

M3 students scored lower than the high ability groups on substitutions acceptable at the story level on both tests, and higher on all other points of the continuum. L6 students scored lower than all the other groups on substitutions acceptable at the story level (36.8, 22.4) and highest on totally unacceptable substitutions (20.0, 37.2), and highest on substitutions acceptable only to following T-units on miscue (7.6).

All subjects from H6, nine from H3, eight from L6, and five from M3 made higher percentages of substitutions acceptable at the story level on cloze than on miscue. Nine sub-

jects from M3, eight from H3, seven from L6, and seven from H6 made lower percentages of totally unacceptable substitutions on cloze than on miscue. Those tendencies are reflected in group scores (see Tables 7, 8 and 9).

Table 9

The Percentage of Cloze/Miscue Substitutions That Resulted in a Semantically Acceptable Construction for Ability Groups

	H3		M3	
	Cloze	Miscue	Cloze	Miscue
Y	81.99	64.74	48.66	43.97
T	3.10	8.97	11.61	9.91
P_1	8.70	15.39	23.66	17.24
P_2	3.10	2.56	6.25	3.88
N	3.10	8.33	9.82	25.00

	H6		L6	
	Cloze	Miscue	Cloze	Miscue
Y	77.38	50.94	36.80	22.40
T	4.07	7.55	12.00	8.00
P_1	10.86	22.17	25.20	24.80
P_2	4.07	4.25	6.00	7.60
N	3.62	15.09	20.00	37.20

Meaning Loss

What percentage of the cloze/miscue substitutions result in a loss of meaning?

Composite Group

The major differences observed between cloze and miscue percentages on the question of meaning loss concern unimportant detail change and totally incongruous substitutions (Table 10).

Table 10

The Percentage of Cloze/Miscue Substitutions That Resulted in a Loss of Meaning for Composite Group

Cloze		Miscue	
N	16.59	N	15.06
P	40.65	P	29.29
M	9.23	M	12.24
Y	33.53	Y	43.41
N + P	57.24	N + P	44.35
M + Y	42.76	M + Y	55.65

On cloze, the largest percentage of substitutions (40.65), which was more than 10 percentage points higher than the miscue score (29.29), changed an unimportant detail. On miscue, the largest percentage of substitutions (43.41), which was

nearly 10 percentage points higher than the cloze score (23.53), were totally incongruous to the story.

Both tests produced similar percentages at the "N" and "M" categories of the continuum. The smallest percentages of substitutions caused a major change in the story on both tests (9.23, cloze; 12.24, miscue). Slightly larger percentages resulted in no meaning loss (16.59, cloze; 15.06, miscue). Grade level groups generally reflected the composite tendencies. Ability groups varied from the composite in several ways but showed the same trend in the differences of tests at the P and Y categories.

Table 10 also shows that there is nearly a 50/50 split when the percentages are reported in two categories instead of four on both cloze and miscue passages. Still more than ten percentage points difference between cloze and miscue exists for both categories (57.24, cloze; 44.35, miscue retained major meaning; 42.76, cloze; 55.65, miscue lost major meaning).

Grade Level Groups

Percentages for both Grade Three and Grade Six did not vary greatly from the composite when presented in four categories (Table 11). Both grade level groups varied from the composite mostly in the percentage of substitutions which caused a major change in the story on cloze (Composite, 9.23; Grade Three, 13.25; Grade Six, 5.94). Third-grade subjects

varied widely in their scores on this category of the cloze continuum (0 to 26, Appendix H); conversely, the sixth-grade subjects varied widely in their scores on this category of the miscue continuum (0 to 36, Appendix H).

Table 11

The Percentage of Cloze/Miscue Substitutions That Resulted in a Loss of Meaning for Grade Level Groups

Grade 3			Grade 6		
	Cloze	Miscue		Cloze	Miscue
N	15.06	17.78	N	17.84	12.77
P	40.78	32.47	P	40.55	26.62
M	13.25	11.08	M	5.94	13.20
Y	30.91	38.66	Y	35.67	47.40
N + P	55.84	50.25	N + P	58.39	39.39
M + Y	44.16	49.74	M + Y	41.61	60.60

When presented in two categories, the cloze percentages still resembled the composite, but Grade Three and Grade Six differed on miscue passages. Grade Three scored more than ten percentage points higher than Grade Six on substitutions which retained major meaning (Grade Three, 50.25; Grade Six, 39.39). There was a greater difference between tests for the

Grade Six group (19 percentage points) than for the Grade Three group (5.6 percentage points).

Ability Groups

Some similarities were observed across the ability groups (Table 12). All groups made a higher percentage of unimportant detail substitutions on cloze than on miscue, a difference ranging from 6.73 percentage points (M3) to 20.82 percentage points (H6). All groups made a lower percentage of totally incongruous substitutions on cloze than on miscue, a difference ranging from 2.32 percentage points (M3) to 17.64 percentage points (H6). More than half of the subjects from each ability group exhibited both tendencies (seven subjects each from Groups H3 and H6; six subjects each from Groups M3 and L6). Other differences and similarities between the tests, with the exception of category "M" mentioned under "Grade Level Groups," do not appear to be consistent with either ability level or grade level when percentages were presented in four categories.

Students in Groups H3 and H6 made substantially higher percentages of no meaning loss substitutions (H3, 22.36, cloze; 26.28, miscue; H6, 27.60, cloze; 19.81, miscue) than Groups M3 (9.82, cloze; 12.07, miscue) and L6 (9.20, cloze; 6.80, miscue) and higher percentages of unimportant detail changes (H3, 52.17, cloze; 42.31, miscue; H6, 52.90, cloze; 32.08, miscue) than Groups M3 (32.59, cloze; 25.86, miscue)

and L6 (29.60, cloze; 22.00, miscue). Groups H3 and H6 made substantially lower percentages of totally incongruous substitutions (H3, 11.18, cloze; 25.64, miscue; H6, 15.84, cloze; 33.49, miscue) than M3 (45.09, cloze; 47.41, miscue) and L6 (53.20, cloze; 59.20, miscue).

When observing the percentages in two categories, the differences between tests are clearly greater in the sixth-grade groups, especially H6. The differences in percentage points for the sixth-grade groups are 28.61 (H6) and 10 (L6); for the third-grade groups 5.9 (H3) and 4.5 (M3). Over 50% of the high ability groups' cloze/miscue substitutions retained major meaning. H6 on miscue passages, however, scored only slightly over 50% (51.89). Less than 50% of the middle and low groups' cloze/miscue substitutions retained major meaning.

Table 12

The Percentage of Cloze/Miscue Substitutions

That Resulted in a Loss of Meaning

for Ability Groups

	H3			M3	
	Cloze	Miscue		Cloze	Miscue
N	22.36	26.28	N	9.82	12.07
P	52.17	42.31	P	32.59	25.86
M	14.29	5.77	M	12.50	14.66
Y	11.18	25.64	Y	45.09	47.41
N + P	74.53	68.59	N + P	42.41	37.93
M + Y	25.47	31.41	M + Y	57.59	62.07

	H6			L6	
	Cloze	Miscue		Cloze	Miscue
N	27.60	19.81	N	9.20	6.80
P	52.90	32.08	P	29.60	22.00
M	3.62	14.62	M	8.00	12.00
Y	15.84	33.49	Y	53.20	59.20
N + P	80.50	51.89	N + P	38.80	28.80
M + Y	19.46	48.11	M + Y	61.20	71.20

Correction

What percent of the cloze/miscue substitutions are corrected?

Composite Group

The highest percentages of substitutions for both cloze and miscue passages (Table 13) went uncorrected (91.12, cloze; 69.24, miscue) and the lowest percentages of substitutions were successful corrections on cloze (3.74) and unsuccessful correction attempts on both tests (5.14, cloze; 4.00, miscue). Substantially more substitutions were successfully corrected on miscue than on cloze (3.74, cloze; 27.76, miscue). The tendencies observed in the Composite table continue across grade level and ability groups.

Table 13

The Percentage of Cloze/Miscue Substitutions That Were Corrected for Composite Group

	Cloze	Miscue
Y	3.74	27.76
P	5.14	4.00
N	91.12	68.24

Grade Level Groups

Table 14 shows that the Grade Three and Grade Six percentages resemble those in the Composite table and the dif-

ferences between the two tables are slight. All tendencies mentioned directly above under "Composite" can also be said of both grade levels.

Table 14

The Percentage of Cloze/Miscue Substitutions That Were Corrected for Grade Level Groups

Grade 3		Grade 6	
Cloze	Miscue	Cloze	Miscue
Y 5.71	29.12	Y 2.12	26.62
P 3.64	4.12	P 6.37	3.90
N 90.65	66.75	N 91.51	69.48

Ability Groups

There were some differences between ability groups in their correction behavior, though differences were not very substantial (Table 15). The groups of higher ability made higher percentages of successful correction attempts on both tests (H3, 8.70, cloze; 31.41, miscue; H6, 4.07, cloze; 30.66, miscue) than the groups of middle and low ability (M3, 3.57, cloze; 27.59, miscue; L6, 0.40, cloze; 23.20, miscue). Only one subject in Group L6 (Subject 11) made a successful correction on cloze. The groups of middle and

low ability left higher percentages of substitutions uncorrected on both tests (M3, 92.41, cloze; 68.96, miscue; L6, 93.60, cloze; 71.60, miscue) than the groups of high ability (H3, 88.20, cloze; 63.46, miscue; H6, 89.14, cloze; 66.98, miscue).

Table 15

The Percentage of Cloze/Miscue Substitutions That Were Corrected for Ability Groups

	H3			M3	
	Cloze	Miscue		Cloze	Miscue
Y	8.70	31.41	Y	3.57	27.59
P	3.10	5.13	P	4.02	3.45
N	88.20	63.46	N	92.41	68.96
	H6			L6	
	Cloze	Miscue		Cloze	Miscue
Y	4.07	30.66	Y	.40	23.20
P	6.79	2.36	P	6.00	5.20
N	89.14	66.98	N	93.60	71.60

Summary

Students tended to make similar substitutions on the silent reading test and the oral reading test. Percentages were closest for the Grammatical Function and Syntactic Acceptability dimensions. Scores differed in all groups for the Correction dimension. Differences were observed between test scores in Semantic Acceptability at the "Y" category (substitutions acceptable at the whole story level) and the "N" category (totally unacceptable substitutions). Differences were observed in Meaning Loss at the "P" category (substitutions that changed unimportant details) and "N" category (totally incongruous substitutions).

Grade level groups generally showed the same tendencies as the Composite group. While percentages were usually similar between grade levels, differences were observed in Semantic Acceptability and Meaning Loss. Third graders made higher percentages of substitutions semantically acceptable at the whole story level. Sixth graders' substitutions differed more widely between the two tasks on Meaning Loss. Where there were other differences, it appeared to be a result of ability (middle for third grade, low for sixth) rather than grade level.

There were differences among the ability groups, but for the most part performances on both tests were similar within each group. H6 scores showed the greatest difference be-

tween tests in Meaning Loss and Grammatical Function. Differences between ability groups along the continuums were also observed. The high ability groups made higher percentages toward the top poles and lower percentages toward the bottom poles of the continuums than the middle and low ability groups.

CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

This chapter presents a summary of the study and its findings, conclusions, discussion of the findings and conclusions, and recommendations for further research.

Summary of the Investigation

The Problem

Little is known about the silent reading process or how it compares with the oral reading process. In the present investigation, a psycholinguistic analysis of oral reading miscue substitutions and silent reading cloze substitutions was used to compare five dimensions of the oral and silent reading processes. Specifically, the investigator attempted to answer descriptively the following questions:

1. What percent of the cloze/miscue substitutions serve the same grammatical function as the author's intended word?
2. What percent of the cloze/miscue substitutions result in a syntactically acceptable construction?
3. What percent of the cloze/miscue substitutions result in a semantically acceptable construction?
4. What percent of the cloze/miscue substitutions result in a loss of meaning?

5. What percent of the cloze/miscue substitutions are corrected?

6. What trends are observed in the cloze/miscue substitutions in the above five areas for students at two grade levels at differing levels of reading ability?

Procedures

The subjects were selected from the population of third graders with high and average reading ability and sixth graders with high and low reading ability in a suburban school district adjacent to a large metropolitan city in the Southwest. Ten subjects were selected for each ability group, high and low for sixth grade and high and average for third grade, on the basis of teacher judgment and student performance in the Passage Comprehension subtest of the Woodcock Reading Mastery Tests (1974).

Four stories selected from the Reading Miscue Inventory--Procedure for Diagnosis and Evaluation (Y. Goodman & C. Burke, 1972a) were each used in an oral reading test form and in a silent reading test form. Two stories were selected for each grade level on the basis of their difficulty measured by the Fry Readability Graph (1968). The oral reading test was administered according to RMI procedures. The silent reading test form was a cloze test with 50 deletions (every seventh word) from the center of the story.

Half of each ability group read one story as an oral test; the other half read the same story as a silent test. The half who read the one story as an oral test read the other story as a silent test, and the half who read the one story as a silent test read the other as an oral test. Each subject was tested individually in two sessions on two separate days, receiving the oral test on one day and the silent reading test on another day in the order randomly determined in advance.

Summary of the Findings

The summary of the findings will be organized according to the five dimensions along which each cloze/miscue substitution was judged.

Grammatical Function

Percentages were similar between cloze and miscue substitutions along each level of the continuum. All groups tended to make the highest percentages of substitutions which retained the grammatical function of the text word on both tests, the groups of high ability tending to make higher percentages in this category than the other groups. Group H6 differed most in performance on the two tests, making a higher percentage in the "Y" category (substitutions that serve the same grammatical function) and a lower percentage in the "N" category (substitutions that change grammatical function) on cloze. H3 showed similar differences,

though to a lesser degree. All groups, except L6, scored slightly higher on cloze than on miscue substitutions retaining grammatical function.

Syntactic Acceptability

Both tests again showed similar scores for all groups. All groups on both tests made the highest percentage of their substitutions syntactically acceptable and the lowest percentage of their substitutions syntactically unacceptable. The high ability groups made higher percentages of acceptable substitutions than the other groups. The low ability group made the highest percentages of unacceptable substitutions. The majority of H6, H3 and L6 subjects made higher percentages of syntactically acceptable substitutions on cloze than on miscue.

Semantic Acceptability

Scores were similarly distributed over the continuum for both tests. Percentages were highest for substitutions semantically acceptable at the whole story level on both tests. Cloze scores were higher than miscue scores in this category for all groups. The differences were greater between cloze and miscue scores for the Grade Six groups than for the Grade Three groups and between the high ability groups and the middle and low ability groups. Cloze scores were lower than miscue scores in the category of totally unacceptable substitutions.

Scores were equally low on both tests in two categories, "T" (acceptable only at T-unit level) and "P_2" (acceptable at sub T-unit level with following portion of the sentence). On miscue, Group L6 was the only group to score highest in the category of totally unacceptable substitutions. All others scored highest in the category of substitutions acceptable at the story level.

"P_1" (acceptable at sub T-unit level with prior portion of the sentence) was the second highest category on cloze for all groups. It was the second highest category on miscue for Groups H3, H6 and L6 and third highest for all other groups (M3, Grade Level groups and Composite group).

Meaning Loss

The major differences observed between cloze and miscue on the meaning loss dimension concern unimportant detail change ("P") and totally incongruous substitutions ("Y"). All groups made a higher percentage of "P" substitutions on cloze than on miscue and a lower percentage of "Y" substitutions on cloze than on miscue. The differences between the cloze and miscue scores at those categories were greatest for H6, followed by H3, then L6. The least difference was noticed for M3.

On both tests, the high ability groups made substantially higher percentages of no meaning loss substitutions and higher percentages of unimportant detail changes than

the middle and low ability groups. The high ability groups made substantially lower percentages of totally incongruous substitutions than the middle and low ability groups.

Correction

The highest percentages of substitutions on both tests for all groups went uncorrected. Substantially more substitutions, however, were successfully corrected on miscue than on cloze for all groups. The high ability groups made higher percentages of successful correction attempts on both tests than the middle and low ability groups. The middle and low ability groups left higher percentages of substitutions uncorrected than the high ability groups on both tests.

Conclusions

The following conclusions are based on this study's findings but need to be judged in consideration of the study's limitations.

1. A comparison of the psycholinguistic dimensions of the oral and silent reading processes seems to indicate that the processes are similar.

2. Reading processes appear to differ more among ability groups than between third and sixth graders or between oral and silent reading.

3. Readers of varying abilities appear to make high percentages of substitutions which retain grammatical function while reading silently and orally. High ability read-

ers appear to make higher percentages than middle and low ability readers.

4. Readers of varying abilities seem to make high percentages of substitutions that are totally syntactically acceptable and low percentages that are totally unacceptable while reading silently and orally. Higher ability readers seem to make higher percentages of acceptable substitutions than readers of middle and low ability.

5. Some differences between oral and silent reading are indicated by the semantic acceptability dimension. High ability readers and sixth-grade readers tend to make higher percentages of substitutions which are totally acceptable to the story during silent reading than during oral reading. Middle and low ability groups tend to make higher percentages of totally unacceptable substitutions during oral reading than silent reading.

6. Sixth-grade readers appear to make a smaller percentage of substitutions that are totally semantically acceptable at the story level than third-grade readers during oral reading and a higher percentage of totally unacceptable substitutions and substitutions acceptable to prior T-units.

7. Readers of high ability appear to make higher percentages of substitutions which are semantically acceptable at the story level during silent and oral reading than all other categories combined. Middle ability readers also seem

to make higher percentages of substitutions which are semantically acceptable at the story level during oral and silent reading, though not to the same extent as high ability readers. Middle ability readers seem to make more substitutions that are acceptable to prior T-units during silent reading and totally unacceptable substitutions during oral reading than high ability readers. Low ability readers seem to make higher percentages of semantically acceptable substitutions at the story level than the other categories during silent reading but higher percentages of totally unacceptable substitutions during oral reading. Low ability readers seem to make more totally semantically unacceptable substitutions during oral and silent reading than middle or high ability groups.

8. There appear to be differences between oral and silent reading processes at the meaning loss dimension. All readers, especially the high ability readers, seem to make higher percentages of small meaning loss substitutions during silent reading than during oral reading and higher percentages of totally incongruous substitutions during oral reading than during silent reading.

9. Readers of all ability levels appear to let their substitutions go uncorrected during oral and silent reading, especially during silent reading. They appear to successfully correct more often during oral reading.

Discussion

Oral and Silent Reading

The findings of this study generally support Farren (1977) and Lindberg (1977), who found similar language processing strategies between oral and silent reading when oral reading miscues and cloze substitutions were categorized according to their proximity to the author's intended word. The similarities in the present study were most apparent in the Grammatical Function and Syntactic Acceptability of the readers' substitutions. The differences in performance during oral and silent reading could have resulted from the differences in the oral miscue and cloze tasks listed below:

1. Miscue--All three cuing systems, syntactic, semantic and graphophonemic are available to the reader throughout the passage.

   Cloze--Only two of the cuing systems, syntactic and semantic, are available to help the reader determine what word belongs in the blank.

2. Miscue--Not only substitutions but all miscues (omissions, insertions, etc.) within the same T-unit as the substitution being analyzed were taken into consideration during the analysis of that substitution.

   Cloze--The responses in cloze blanks within the same T-unit as the substitution being analyzed were taken into consideration during the analysis of that

substitution. Other miscues made during silent reading could not be recorded and therefore could not be taken into consideration during analysis.

3. Miscue--Substitutions were made spontaneously and quickly as the reader performed orally.

Cloze--Substitutions were sometimes made quickly and sometimes made slowly, after much thought. Sometimes the reader finished the passage and came back to the cloze blanks where s/he was having difficulty.

4. Miscue--Locations where substitutions were made were determined by the reader and therefore monitored the reader's difficult spots better than cloze.

Cloze--Cloze substitutions were limited to the blanks located and determined in advance by the investigator and were less likely to monitor portions of the passage where the reader was having difficulty.

The readers used similar correction behavior during oral and silent reading in that they tended to let their substitutions go uncorrected. They appeared, however, to successfully correct more often during oral reading than during silent reading. Number 1 in the list of differences between cloze and miscue tasks provides a possible explanation for the difference in correction success. During the silent reading task, the readers had only contextual cues to aid correction, but during the oral reading task, they had

graphophonemic cues as well. Therefore, it may have been easier for the readers to correct successfully during the oral miscue task, as they had more cues to assist them.

The Semantic Acceptability of substitutions tended to be similar for oral and silent reading in the middle categories of the continuum. The poles of the continuum seemed to reveal that readers were attending to semantics more during silent reading than during oral reading. That finding is consistent with Dolqueist (1977), who observed that average second-grade readers and disabled and average fourth-grade readers appear to use semantic constraints to a greater extent on the cloze procedure than during oral reading. The difference between tasks described in number 2 on the list points out an advantage that readers have during the oral miscue task which they do not have during the cloze task. Since each substitution is analyzed in light of all of the reader's miscues during oral reading, higher scores in semantic acceptability should result than for the cloze procedure where miscues made during silent reading but not recorded in blanks are not taken into consideration. Both numbers 3 and 4, however, describe advantages that the cloze task gives the reader over the oral miscue task for making semantically acceptable substitutions. Generally, readers gave more thought to the cloze substitutions. By the nature of the task, the reader had time to think of and reject several

possibilities before choosing the word s/he thought most appropriate to write in the blank. During the miscue task, however, the substitutions were more likely to be the first word that came to the reader's head because of the speed with which they were given. As a result, it was easier for the reader to make semantically acceptable substitutions during the cloze task than during the miscue task. Furthermore, miscue substitutions were more likely to occur where the reader was having difficulty with the text (number 4) and added to the pressure of making a response quickly during the oral performance; it was perhaps more difficult to make semantically acceptable substitutions during the miscue task. The two advantages given readers during the cloze task may have overshadowed the one given during the miscue task.

Since the oral miscue substitutions tended to be more semantically acceptable than the cloze substitutions, it is reasonable that the oral miscue substitutions would retain more major meaning. The differences in Meaning Loss scores between oral and silent reading tasks were greater for the sixth graders, especially Group H6, when compared with the third graders. For that reason, differences will be discussed more fully under "Grade Level" and "Varying Levels of Ability."

Grade Level

Third and sixth graders made similar percentages along the continuums in three of the dimensions: Grammatical Function, Syntactic Acceptability and Correction. Percentages were also similar between the two groups for Meaning Loss on the cloze passages. (Meaning Loss scores were more reliable when analyzed as having two categories [83.7] rather than four [59.7] and therefore will be discussed as having two categories.) On the miscue passages, however, the third graders' substitutions retained more meaning than the sixth graders' substitutions. Additionally, the third graders' substitutions, on both cloze and miscue passages, were more semantically constrained than the sixth graders' substitutions. Some of those findings do not correspond to previous research. Schlieper (1977) found that on miscue passages, as grade levels increase so does the tendency to make syntactically acceptable miscues. Other studies found that the semantic acceptability of miscues tends to increase with the increase of grade level on miscue passages (Auteri, 1979; Bean, 1978; E. Burke, 1976; and K. Goodman & C. Burke, 1973). Still others found an increase in both syntactic and semantic acceptability of miscues on miscue passages (Menosky, 1972) and on both cloze and miscue passages (Dolqueist, 1977). According to previous research, the current Sixth-Grade group should have made more syntactically and semantically accept-

able substitutions than the Third-Grade group. It follows that more of the sixth graders' substitutions should have retained major meaning from the passages than the third graders' substitutions. Instead, Syntactic Acceptability scores on both passages and Meaning Loss scores on cloze were similar for both grade level groups. Third graders made more semantically acceptable substitutions on both tests than the sixth graders and third graders made more substitutions that retained major meaning on miscue passages than the sixth graders.

The investigator found a possible explanation for the discrepancy between present and previous research by calculating the difficulty of the materials for each subject from the exact word replacements on the cloze passages. Readability formulae which measure the difficulty of materials on the basis of word and sentence length, such as the one used for the selection of materials for this study, do not take into account the more profound language features that influence readability as does the cloze assessment (Bormuth, 1966; Fry, 1969; Miller, 1975).

The investigator determined the level of difficulty (capacity, independent, instructional, or frustration) from the quantitative cloze scores. Although all materials were on the grade level of the subjects according to the Fry Readability Graph's (1968) ratings and the reading level of

the subjects was checked by the Woodcock Passage Comprehension subtest, one of the sixth-grade stories, "First Kill," was very difficult for the sixth-grade subjects. It was rated as frustration level for all of the L6 group and more than half of H6 (Appendix I). The opposite is true of one of the third-grade stories. "Small Deer" was very easy for the third-grade subjects, according to the quantitative cloze rating. All of H3 and one M3 subject were reading at their capacity level on this story. The remaining third- and sixth-grade stories were equally difficult for the respective grade level groups.

Previous studies have found that elementary school readers make more semantically acceptable substitutions while reading at their instructional level than at their frustration level on miscue (Christie & Alonso, 1980; Williamson & Young, 1974). Kibby (1979) found that readers made more contextually appropriate miscues on less difficult passages. Legenza and Elijah (1979) found that second and third graders made more semantically acceptable substitutions while reading at their independent level than their frustration level on cloze.

The easiness of one of the third-grade stories and the difficulty of one of the sixth-grade stories could have caused differing influences on the reading strategies of both grade level groups. The third graders might have made

lower quality substitutions on a more difficult story. The sixth graders might have made higher quality substitutions on a less difficult story.

Varying Levels of Reading Ability

The findings of the present study support previous research which has found differences in reading strategies among ability groups. The high ability groups tended to make higher quality substitutions than the middle and low ability groups. Consistent with Cambourne (1977) on cloze, the high ability groups made higher percentages of substitutions which retained the Grammatical Function of the author's intended word than did the middle and low ability groups. The high ability groups made more substitutions which were syntactically acceptable than the middle and low ability groups, a finding consistent with Potter (1980) on miscue passages. The high ability groups made more semantically acceptable substitutions than the middle and low ability groups, consistent with Neville & Pugh (1976) on cloze passages and Leslie (1980) on miscue passages. Other studies agree for both syntactic and semantic acceptability (Au, 1977; Bean, 1978; K. Goodman & C. Burke, 1973; Menosky, 1972 on miscue passages; Cambourne, 1977; Pacheco, 1980 on cloze passages). The high ability groups made higher percentages of substitutions which retained major meaning, consistent with Au (1977), Leslie (1980), and Pflaum (1978) on miscue passages, and

Cambourne (1977) on cloze passages. Readers in the high ability groups successfully corrected more of their substitutions than did those in middle and low ability groups, consistent with Au (1977), D'Angelo (1980) and Pflaum (1978) on miscue passages. Thus it appears that readers of lower ability do not use grammatical, syntactic, semantic or correction strategies as often or as well as readers of higher ability and that conclusions could be made concerning the strategies of readers at varying levels of ability. Of all the studies mentioned above, however, none using cloze passages and only three using miscue passages reported an effort made to match the difficulty of the passages with the ability of the readers. Although Potter (1980) and Leslie (1980) used the same materials for all readers, the lower ability readers were in higher grade levels than the higher ability readers. Wangberg & Thompson (1982) used frustration level materials for each reader of all abilities.

Auteri (1979) used materials up to the frustration level for each subject, then stopped. She studied the oral miscue strategies of high, medium and low ability readers in grades one through six. She reported differences in strategies among grade levels but not among ability levels.

As previously mentioned, the difficulty that materials give readers affects their reading strategies, and readers use better strategies when materials are less difficult

(Christie & Alonso, 1980; Kibby, 1979; Legenza & Elijah, 1979; Williamson & Young, 1974). In the present study, low ability readers may have compared more favorably with high ability readers in strategy use if the materials were equally difficult for all readers at either an independent or instructional level.

Group H6 showed the greatest difference in performance between the oral and silent reading tests. Their scores showed a better performance during silent reading for Grammatical Function, Semantic Acceptability, and Meaning Loss. Two variables may have worked together toward the differing results. In the first place, concerning the differences between the oral miscue and cloze tasks (see numbers 3 and 4 on the list of differences between tasks above, pp. 169-70), two of the differences made the cloze task easier for making semantically acceptable substitutions. The same two could make the cloze task easier for making substitutions which retain grammatical function and major meaning. Secondly, concerning the readability of the materials (see "Grade Level" above, pp. 177-78) according to the quantitative cloze assessment one of the sixth-grade stories was much more difficult for the H6 group than one of the third-grade stories was for the H3 group. Although Group H6 did as well as H3 on cloze passages in those three categories, they did not do nearly as well on miscue passages in Semantic Accept-

ability or Meaning Loss.

Implications

Miscue analysis and qualitative cloze analysis can give teachers important diagnostic information about their students' reading strategies. Teachers can increasingly emphasize silent reading and monitor strategies periodically by alternating miscue and qualitative cloze analyses from their students' readings of various types of reading materials. Text variables can affect reading strategies and give misleading information about students' reading strategies. Variables involving the cloze and oral miscue tasks can affect student performances and also give misleading information about students' reading strategies. Therefore, teachers should not draw fixed conclusions about a student's habitual reading strategies from one analysis.

Recommendations for Further Research

The following recommendations for future research developed during the process and presentation of this study. Investigators in future studies of the same type should do the following:

1. Replicate this study using a sample of low instead of average ability third-grade readers. Teacher judgment is not always an accurate measure of student reading ability. Steps should be taken to insure that low ability groups are truly low in reading ability when drawing samples from high

socioeconomic suburban areas and when wanting to compare readers of varying abilities.

2. Go over the cloze test with the student before s/he leaves the testing room to clarify misspelled words and homonyms in order to avoid making wrong decisions about his/her intended word.

3. Divide Meaning Loss and Semantic Acceptability into fewer categories. Scores are more likely to be unreliable when there are several categories with slight distinctions between them.

4. Replicate this study using reading materials at the instructional level of the subjects. Steps should be taken to insure that there is equality in the difficulty of materials among ability groups if the conclusions are going to be made from comparisons of their reading strategies.

5. Reanalyze the data using appropriate statistical techniques in order to determine if the findings are significant.

6. Analyze cloze and miscue retellings to see whether further relationships can be found between oral and silent reading processes.

APPENDIXES

APPENDIX A

APPROVAL LETTERS FROM THE PRINCIPALS

March 10, 1981

Dr. Kathleen Jongsma
College of Education
TWU
Box 23029
Denton, TX 76204

Dear Dr. Jongsma,

It was a pleasure meeting you at T.A.I.R. Conference at S.M.U. I have been impressed with the many good things I have heard about you, and our meeting added confirmation.

I do give you permission to come into [redacted] Elementary School to conduct some research and to do some testing with some of my students, and my staff and I will cooperate in every possible way.

We welcome you now and await hearing from you concerning further details of your studies.

Very truly yours,

Raymond Anderson

Raymond Anderson, Principal

February 23, 1981

To: Dr. Kathy Jongsma

From: Nell Pearce [redacted] Elementary

[redacted] Elementary School in [redacted], Texas would be pleased to participate in your research on the Psycholinquistic Dimensions of the Oral and Silent Reading Processes. Our third grade teachers of the lower group, Cathy Womack and higher group, Louise Natals are both very open to student need and to utilization of new skills. They join me in inviting you to use [redacted] third graders for your research.

You mention a willingness to assist in inservice as payment for our services. We were hoping that you could lead us in two inservices next year as we embark on our goal of improvement of our reading program. We wish to develop one session on:

1. The Importance of Vocabulary Development in the reading process
2. One session on Miscue Analysis and/or Close Procedure

Please let us know if this exchange could take place. We will talk later about parent permission, dates, etc. if this arrangement is agreeable to you.

Personally, I am very excited about the prospect of having you in our building for I wish for my teachers to share in your enthusiasm for reading.

APPENDIX B

WOODCOCK PASSAGE COMPREHENSICN SCORES

Grade Three

Subject	Raw Score	Stanine
1	68	9
2	62	8
3	61	8
4	60	8
5	60	8
6	59	8
7	59	8
8	58	7
9	56	7
10	55	7
11	42	6
12	42	6
13	39	5
14	39	5
15	39	5
16	38	5
17	37	5
18	36	5
19	33	5
20	32	5

Grade Six

Subject	Raw Score	Stanine
1	80	9
2	78	8
3	76	8
4	75	8
5	73	7
6	72	7
7	71	7
8	71	7
9	71	7
10	70	7
11	51	4
12	48	4
13	46	4
14	45	4
15	44	3
16	43	3
17	43	3
18	40	3
19	39	3
20	36	3

APPENDIX C

TEST STORIES IN CLOZE FORM

NAME OF THE TREE

Once upon a time, in a faraway country, there grew a beautiful magic tree full of ripe, golden fruit. There was enough fruit to feed all the people in the country. But the people could not get the fruit from the tree, for they did not know the tree's name. And until someone said the magic name, the fruit would not fall down from the tree, and no one could pick it, no matter how hard he pulled.

So the people stood under the tree and looked up at the beautiful, ripe fruit they could not eat. At last, a wise man said, "Let us send someone to the King of the next country. He will surely know the name of the tree because he knows magic."

"Yes!" the people cried. And they decided

to send Cat to the King.

"I will go," said Cat bravely, and he set out to the place where the King of the next country lived. He ran almost all the way.

In the next country there was more than enough food. The King gave Cat a big dinner. Then Cat told him about the wonderful magic tree.

"Ah yes," said the King of the next country, "The name is A-nan-ul-fay-dee-ma. When you say it, the fruit will all fall down, and on the next day there will be still more ripe fruit."

Cat started right back to his own country. But he was so full of good food and so tired from this long trip that he got sleepy. Very sleepy. He lay down under a tree and fell fast asleep.

Name of the Tree

When he woke up, he tried to think of the name of the magic tree.

At last he said to himself, "I've got it! The name of the tree is A-nan-el-fay."

He ran the rest of the way until he came to his own people. He stopped under the tree and said loudly, "A-nan-el-fay!"

Nothing happened. The fruit stayed on the magic tree.

The people all stared at Cat. They blamed him for their troubles. Then they began to whisper together. They moved toward him.

Cat began to be afraid that they might hurt him.

Then the old wise man said, "Stop that foolishness and leave Cat alone. Send Dog at once before we die of hunger."

Name of the Tree

Dog jumped up and ran to the King of the next country. He told the King that Cat had forgotten the name.

"Do not worry," said the King. "I will tell you. Now have some dinner with me before you start back."

"Just a little," Dog said. "Cat said he ate so much that he had to stop and sleep."

Dog had a small dinner and _____ off. He ran so fast that _____ didn't see a log that had _____ across the trail. He fell so _____ that he hit his head on _____ stone.

"My goodness," he said when _____ got up. "I believe that fall _____ knocked every thought out of my _____."

Dog was almost right. Anyway, the

Name of the Tree

_____ had knocked the name of the

_____ out of his head!

He tried _____ tried to

remember it. At last _____ said, "I've

got it! It's A-fay-dee-ma!"

_____ he ran happily on until he

_____ to all the people. "Look!" he

_____. "Watch me! Here is the magic

_____. A-fay-dee-ma!"

But no fruit fell from _____ tree.

There was a great quietness _____

around.

The people by now were _____

hungry and sad that they didn't _____

blame foolish Dog.

The old man _____ up again.

"Send Turtle," he said.

Name of the Tree

_____ people were still hungry but they _____ to laugh.

"Turtle!" they said. "Why, _____ couldn't even get there in time _____ help us!"

"Your fast runners were _____ help," said the wise man. "I _____, send Turtle."

The people all talked _____ once.

"Try it," one said.

"The _____ man is right!" said another.

Turtle _____ wait. While the people were talking _____ walked slowly to the old man.

"_____ are wise," he said.

Name of the Tree

"Tell me _____ I go how to remember

a _____ word."

"Never stop saying it," said _____

old man. "Say it over and _____. Then

you will remember the word."

_____ started out in as big a

_____ as a turtle could go.

He _____ all day and all night

until _____ came to the next country.

The _____ was annoyed at this

new visit _____ he told Turtle the name

of _____ tree.

Turtle started saying it right

_____. He didn't even eat any of

_____ King's food.

"A-nan-ul-fay-dee-ma," he said as

_____ started out for home.

Name of the Tree

"A-nan-ul-fay-dee-ma," he _____

when he tripped on a rock.

"_____," he said when he felt

sleepy.

_____ he saw the tree and all

_____ the waiting people.

"What is it?" one man said.

"Tell us quickly," said a girl.

Turtle shook his head and kept on whispering to himself.

He came to the tree.

"A-nan-ul-fay-dee-ma!" he said for the last time.

All the fruit fell and all the people ate until they were full.

After they stopped being hungry, they said, "What can we do for Turtle?"

Name of the Tree

"Make him our King," said the old man,

"because he has saved our lives."

This time the people did not laugh.

They said, "Long live King Turtle!"

"WAR ON SMALL DEER!"

One day Small Deer wanted to go to the other side of the river to eat the sweet fruit there. As soon as he came to the river, the crocodiles put their huge heads up out of the water.

"War on Small Deer! War on Small Deer!" they roared.

One crocodile rushed out of the water to bite Small Deer.

Small Deer pushed a small stick in the crocodile's mouth.

Then Small Deer cried, "You bit my leg, Let go! Let go!"

The crocodile was fooled. He thought the stick was really Small Deer's leg. So he bit down hard on the stick.

All the other crocodiles laughed. Now,

when crocodiles laugh, they shut their eyes. When they had all shut their eyes, Small Deer ran away.

But he still wanted the sweet fruit on the other side of the river.

After a while, Small Deer came back to the river. He could not see any crocodiles there. But something was floating in the middle of the river. It looked like a huge, dark log. But could it be a crocodile?

"Are you a crocodile?" Small Deer asked the log.

No answer.

"Or are you just a big brown log?" Small Deer asked.

Still no answer.

"If you are a crocodile, you will float along with the water," said Small Deer.

"But if you are a log, you will float the other way."

Small Deer watched.

Would it float _____ with the water? Or would it _____ the other way? Now, Small Deer _____ that logs must always float with _____ water.

The dark thing began to _____ the other way! So Small Deer _____ sure this really was a crocodile, _____ not a log at all.

"Crocodile! _____!" shouted Small Deer. "You gave yourself _____. I fooled you!"

At once, all _____ crocodiles put their long heads out _____ the water and roared, "War on _____ Deer! War on Small Deer!"

"War on Small Deer!"

Small _____ still wanted the sweet fruit on _____ other side of the river. He _____ to think how he could get _____.

The crocodiles did not go away. _____ just went down under the water. _____ and there, Small Deer could see _____ crocodile nose sticking out.

Small Deer _____ that fruit very much. So he _____ again.

"Oh, you crocodiles, hear me!"

_____ King has sent me to count _____ the animals. The squirrels the birds, _____ dogs, the lions and the foxes. _____ must count them all."

Then Small _____ went on, "The King will give _____ bag of gold to the animals _____ are bigger in number than

any _____ kind. So come up and be

_____, crocodiles. Who knows? You may

be _____ lucky ones who win the gold

_____ the King."

Crocodile noses began sticking

_____. One nose. Then another nose.

Then _____.

"Now do not move," cried Small

_____, "I must count you one by

_____. Let us see if you are

_____ in number than all the other

_____ of animals. Then you may win

_____ gold!"

The crocodiles stayed very still.

_____ Deer jumped on the nose

of _____ first crocodile. "One!" he

shouted.

"Two!" _____ Small Deer as he

jumped on _____ nose of the second crocodile.

"Three, _____, five!" called Small Deer as he _____ from crocodile nose to crocodile nose.

"_____, seven," Small Deer shouted from the _____ of the river.

"Eight, nine, ten!" _____ shouted.

One more jump, and Small _____ was on the other side of _____ river.

"Good-by!" said Small Deer.

Now the crocodiles knew that Small Deer had played still another trick on them.

"War on Small Deer! War on Small Deer!" they roared.

But it did them no good. Small Deer was on the other side of the river, eating the sweet fruit.

FIRST KILL

Though he had not known for sure that he would be using them soon, Hawk had been making arrows for the past two moons. Not the small, blunt arrows which boys used to shoot at birds and squirrels, but flint-headed arrows, ground sharp as knives. He had modeled them carefully after the arrows of Dead-Come-Back-Man, one of the elders of the Oglala who had been a great warrior in his time. Dead-Come-Back-Man had also helped Hawk shape and string a man-size bow, telling him the while the tale of his own first hunt when he had won the name of Panther Boy.

It was as he had looked down at the great buffalo herd with his father that it suddenly came to Hawk that he could wait no longer to prove himself. He must join in the

coming hunt. He had the bow and the arrows in the lodge of Dead-Come-Back-Man, who had kept his secret well. What he did not have yet was a grown man's strength. But he had the will.

At dawn on the morning of the hunt Hawk slipped away to the tipi of Dead-Come-Back-Man. His old friend was already up and sitting by his small fire. Hawk knew where his bow and arrows were kept wrapped in a piece of deerskin and went to the place without words. Dead-Come-Back-Man was watching him. Meeting the boy's eye, he held it long and in silence across the fire.

"I must!" Hawk said, answering the look. "The time has come."

"Then I have nothing to say," the elder told him. "The time is for the hunter himself to know."

It was his father's fastest horse that Hawk sought out, a piebald with four white feet. Then he rode to the top of a hill to watch for the start of the hunt. Waiting, he thought only of what he intended to do and how the thing might be done.

At last the party of twenty-one young hunters came in sight, riding fast and in close formation. Hawk saw that Hurries-To-War was in the lead as usual, and behind him young South Bear, a fire-eater with many war coupos to his credit. There were but three old muzzle-loading rifles in the party, all the other hunters carrying bows and arrows. Hawk let them get well ahead, then followed at a fast lope, his deerskin shirt-tails flying and flapping as he cut a circle to the side.

The party was nearing the buffalo herd

before Hawk was noticed. Seeing his big bow, the hunters called out jeering shouts of "On-hey!" to quell and shame the boy beyond following. "On-hey!" was the shout a warrior gave when he struck or touched an enemy to count coup in battle. Ignoring the mockery, Hawk followed on sometimes at a tangent, but always circling in again. Soon the hunters were watching him in silence, no longer merely amused and mocking.

Hawk felt keenly their new seriousness. They would not drive him off, he knew; it was not the Sioux way to stop even a boy bent on a feat of courage or name-hunting. But neither would they help or advise him, or make allowance for his youth and inexperience. It was a bold step he had taken, throwing off the protec-

tion as well as the fetters of youth. If he was injured it was his own concern. If he failed he would be shamed and laughed at. Better to be killed than that!

He veered aside, asking no quarter.

Hawk was the first to reach the game. He did not stop at the fringe of the herd but lanced his mount into the thick of the mass as he had seen the boldest hunters do. Before him and on both sides buffalo milled and churned uneasily. Behind him he heard shots and the high wild yelling of the young men. The milling buffalo broke into thundering flight and he was carried along in the surging brown tide.

Hawk's horse, though trained as a buffalo runner, was almost out of hand with fear, here in the midst of the herd. No escape except straight

up, which was what the piebald was trying for, white-eyed and snorting in panic. Hawk clung to the mane, leaning far forward. Stumble of horse or slip of rider would be fatal here; the fallen one would be ground to pulp within a minute. Even if he would, Hawk could not have used his bow now. It took all he had just to stay with his horse. Nor was there space on either side to drive an arrow home. The thick rising heat of the many huge bodies enveloped him, blent with the musky smell of animal flesh and fur so overpowering that he drowned in it for a time.

When Hawk's consciousness broke through the darkness it seemed that the earth was tipping and there were buffalo swinging in the sky. A deep, dull reverberation filled all the air, the thunder of countless hoofs. Leaning far forward

along his horse's neck and mane, he spoke quiet words into its brown ear until by slow degrees the snorting of fear and the plunging eased.

On they swept, sometimes with space about them now, but they could not have gotten out of the crush or stopped had they tried. Hawk waited for another shifting in the mass, then chose his kill, a young bull off to his right. Gradually he kneed his mount closer, jerked an arrow from his quiver and snapped it to the string. With all his strength he bent the bow, drawing the arrow back to its flint head.

Thwack! The feathered shaft sank half its length behind the shoulder, a bit too high for the heart. The rush of the young bull never slackened. Hawk rushed after him, as if tied to his quarry by a thong. He fitted another arrow to

the bow. This time as he came abreast of his game he reached far under the horse's neck with his left arm, clinging with his right leg and right arm, his left leg far down under the belly of his horse. He let go a second shaft inches below the first. The young buffalo bellowed but pounded on, big head low, liquid eyes gleaming wildly beneath the curled and matted fur.

Scalding shame poured through Hawk. He was not strong enough to bring down game, even with a man-sized bow and perfect arrows! The hunters would laugh and mock him, for no doubt they had seen. Even the girls would hear of it and titter as he passed.

The side of the young bull was dripping red, the eyes rolling whitely now in panic and pain. This _____ would suffer much,

for it would _____ hours or days from

now before _____ would die.

Suddenly Hawk knew that _____

could not let the young buffalo _____.

He had marked it for his _____. He must

bring it down even _____ he had to follow

it on _____ the country of the Crows to

_____ west. He reached back for another

_____, then sudden fury made him fling

_____ bow aside. He whipped the quiver

_____ over his head and threw it

_____. Now Hawk waited his chance and

_____ his mount in so close that

_____ knee was pressing the wounded bull's

_____. He jerked up his legs so

_____ for an instant he was crouched

_____ all fours on the bare back

_____ his galloping pony, then launched himself _____ and fastened with clutching hands to _____ fur of the buffalo's hump. With _____ wild whinny his horse veered crazily _____ and Hawk was left there literally _____ his prey.

In spite of clutching _____ and clamped legs he did not _____ whether he could hang on to _____ pain-crazed bull or not. His buffalo _____ was crashing now through low brush _____ Hawk's legs and sides were cut _____ whipping branches till the blood ran. _____ was no give to that wide, _____ back, no letup in the buffalo's _____ gait. The stiff short legs seemed _____, springless and the hoofs came down _____ ungiving stone. Hawk felt the spasms _____ terror

that tore through the animal _____ it took all his remaining strength _____ crawl slowly forward onto the sloping _____. It was slightly softer there, for _____ head of the buffalo all but _____ the ground. He offered up swift _____ to sun and moon and called _____ the earth spirit, who presided over _____ man's hunting. Then his knife was _____ his right hand and, risking death _____, he reached far down to stab _____ stab beneath the bull's straining neck. _____ animal's blood spurted, covering Hawk's arm. _____ the young bull pounded on and _____ not die.

Leaning close to one stiff black ear, Hawk voiced the ceremonial words of the buffalo hunter: "Grandfather, my people are hungry.

You were created for this, so I must kill you." On his own he added: "Grandfather, fight and run no longer, You are very tired!"

Even so it seemed an endless time before the animal's gait began to falter. Then suddenly the downthrust head and horns gored the earth, and Hawk was flung forward and free of the crashing fall. Instantly he was on all fours, scuttling back to lie in the lee of the now prone body of his kill while hundreds of buffalo coming from behind barely broke their ranks around the fallen one and the small figure huddled behind it.

For an endless time humped forms continued to hurtle past in a wild confusion of pounding hoofs, rolling eyes and froth-strung muzzles. There was an end at last. But even then Hawk stayed low, offering up his thanks to Wahkan-Tanka, the Great One, for this miracle.

When the first of the hunters arrived, Hawk was too busy even to look up. Red-armed, he had already taken the tongue and heart of his kill, and with the skill of a seasoned hunter had slid the hide down the belly and girdled the four legs.

"I, Hawk, have killed this one!" was all he said.

But more than that was on record, for through a break in the ranks of the herd both South Bear and Eagle Seizer had glimpsed the end of Hawk's ride and the final knifing. Very different the hunters' smiles were now. One man sighted Hawk's pony circling afar and rode out and brought it in.

Indicating the sixty dead buffalo strewn over a mile of plain, Hurries-To-War said, "We are going back to bring the women for the skinning-

out. You had better ride with us."

Hawk answered firmly, "I, Hawk, will skin this one out!"

Darkness had almost fallen when Hawk rode into camp with the hide, heart and tongue of his kill, his bare legs and arms blood-encrusted. He was bone-weary but content, for the story of his triumph had gone before him through the camp so that there was awe in the eyes of his playmates who had run out to meet him. Trills and sighs came from the girls and young women as Hawk rode in among the tall tipis.

Standing Elk came and took hold of Hawk's thong bridle, calling out as was the custom.

"Look, my son has become a hunter! My son is brave!"

Horned Thunder, the war chief, was

standing near. A smile broke through his fierce owl visage as he said, "It is but a little way from a fearless hunter to the brave warrior."

Now Standing Elk led Hawk, still riding the piebald, round the great circle of lodges for all to see. Hawk had to hold hard to hide his feelings, yet he accepted the honor proudly, for his courage was too real a thing to admit a false modesty.

That night there was feasting in the Sioux camp and the dance of thanksgiving that followed a successful hunt. In the tipi of Standing Elk, around the small fire, visitors came and went. Hawk was asked and re-asked to tell the story of his hunt. He related it all simply and gravely. Across the fire the eyes of Willow Woman and Wood Mouse gleamed with pride and pleasure. To show his appreciation of the honor to his son,

Standing Elk gave away a horse to an elder who had recently lost his. To Hawk he gave the piebald pony. It was the father's privilege to give his boy a new name, had he wished, but Standing Elk decided against it. Hawk was a fine name and there was none he could think of that fitted the boy so well.

WHY THE PARROT
REPEATS MAN'S WORDS

In ancient times it was not the parrot which was taught to speak, but the lorikeet. For people had found that this small bird was intelligent. If he heard a word he could repeat it easily. Not only that, he often spoke his own thoughts, instead of merely imitating the sounds he heard.

Then all this changed.

One day, a farmer saw a buffalo in his rice field. It was his neighbor's buffalo, but he killed it, ate some of the meat, and the remainder he hid. Part of the meat he hid

on the top of the rice house. The rest he hid in the rice bin.

The next day the neighbor came looking for his animal, and asked, "Have you seen my lost buffalo?"

The farmer said, "No, I haven't."

But just then the farmer's lorikeet spoke up. "My master killed it. Part he hid in the rice bin and part he hid over the rice house."

When the neighbor heard this, he looked where the bird had said, and there he found the meat.

"Yes," acknowledged the farmer. "This is where I always keep meat. But I did not see your buffalo. This is the meat of another animal."

The lorikeet called out again: "He killed it. Part he hid in the rice bin and part over the house."

The neighbor was perplexed. He didn't know whether to accept the word of the man or the bird. And so he took the matter to court. The trial was set for the following day.

The farmer who had stolen the meat said to himself, "Why should the word of a lorikeet be taken, rather than my word?"

That night he took the bird from its cage and placed it in a large brass pot. He covered the pot with a cloth, so that it was dark inside. Outside, the night was clear and

bright. The moon was full. But inside the pot, the lorikeet could see nothing of this. The man began to beat on the pot, softly at first, then more loudly, until it sounded like thunder. He took a dipper of water, so that it sounded like rain. All night long he pounded on the pot and dripped water. At dawn, he put the lorikeet back in its cage.

When it was time for the trial, the farmer took his bird and went to court. The neighbor who had lost the buffalo told how the lorikeet had instructed him where to find the stolen meat. The judge asked the lorikeet for his testimony. The

bird repeated as before:

"He killed the buffalo. Part he hid in the rice bin and part he hid over the rice house."

The _____ who had stolen the buffalo spoke _____, saying, "The meat that was in _____ rice bin and over the rice _____ was that of another animal. How _____ you give more weight to the _____ of this stupid bird than to _____ words?"

The lorikeet is indeed intelligent," _____ judge said.

"He speaks more often _____ nonsense than with sense," the farmer _____. "Ask him another question.

Why the Parrot
Repeats Man's Words

Ask him _____ kind of a night

we had _____ night."

So the judge asked and _____

bird replied, "Last night there was

_____ a gale. The wind blew, rain

_____ down, and thunder roared."

"If you _____," the farmer

said, "last night was _____ and

clear, and the moon shone _____

all its brightness. Can you now _____

me on the testimony of this _____?"

The people were convinced, and the

_____ was convinced. They said:

"No, you _____ innocent, and your

life was endangered _____ the

witless testimony of the lorikeet.

_____ we will not keep this

bird _____ our houses and care

for him _____ though he were one

of us."

_____ the man who stole

the buffalo _____ freed, and the

lorikeet was sent _____ into the

forest. The lorikeet lived _____

he had before he had known _____,

fending for himself and caring for

_____ own needs.

But one day the _____ saw

a new bird in the _____, larger

than himself and covered with _____

red and green feathers. He spoke

_____ the new bird, asking who he

_____.

"I am the parrot," the bird

_____. "I have come from the South, _____ now I am going to live _____ this country. I speak the language _____ man."

Then the lorikeet said, "Welcome _____ the country. As you are a _____ here, accept my advice and beware _____ man. I too speak his language. _____ years I was kept in man's _____ and cared for. I saw with _____ eyes and heard with my ears. _____ spoke not only words that man _____, but what was in my own _____ as well. But when I said what was in my own mind, it displeased man, and I was driven away. This is my warning: When man learns that you can speak his

language, he will capture you and bring you into his house. Say nothing to your captor but what he teaches you. Repeat his words and nothing more. For man loves to hear only his own thoughts repeated. He is not interested in truth or wisdom from any other source."

The parrot listened to the lorikeet and thanked him. And it came about as the lorikeet had predicted. Man learned of the arrival of the talking parrot, and the parrot was captured and taken to man's house. He was fed and cared for, as once the lorikeet had been cared for, and he was taught the things that man

wanted him to say.

But fearful of ever saying his

true thoughts, lest man resent

them, the parrot echoes only the

words he hears from man's lips.

APPENDIX D

SAMPLE CLOZE PROCEDURE

SILENT READING SAMPLE

Directions: Read the story silently. Beginning in the second sentence every tenth word has been left out. Do your best to guess the correct words that are missing and write them in the blanks. All of the blanks are the same length so they will not give you a clue to the length of the missing words. If you do not know the answers for some blanks, guess.

Police Protect Us, Too

If your father is not a fireman, maybe he is a policeman.

Or maybe--just maybe--the father of some other _____ or boy in your room is a policeman.

Ask _____ find out.

Maybe no one in your room or _____ has a father who is a policeman.

But lots _____ fathers are policemen, and their children go to school.

_____ next time you see a policeman on your street, _____ him what school his children go to.

Policeman like _____ and are glad to help you.

You just ask and see.

APPENDIX E

SILENT AND ORAL READING TEST DIRECTIONS

DIRECTIONS

Silent Reading

Read the story silently. There is a section in the middle where every fifth word has been left out. Do your best to guess the correct words that are missing and write them in the blanks. All of the blanks are the same length so they will not give you a clue to the length of the missing words. If you do not know the answers for some blanks, guess. After you finish reading the story and filling in the blanks, you will be asked to tell everything that you can remember about the story.

Oral Reading

Read the story aloud. You will not be given any help. If you come to a word that you do not know, do your best to figure it out by yourself. After you have finished reading the story, you will be asked to tell everything that you can remember about the story.

APPENDIX F

GUIDELINES FOR THE IDENTIFICATION OF SUBSTITUTIONS

GUIDELINES FOR THE IDENTIFICATION OF SUBSTITUTIONS

Miscue Analysis

1. Sometimes more than one word is substituted for one word in the text, i.e., all insertions directly preceding and following substituted words are included; e.g., "The people all started to talk talked at once." "Started to talk" is the substitution for "talked."

2. Sometimes one word is substituted for more than one word in the text, i.e., all omissions directly before and after are included; e.g., "He had to think how he could to get it." "To" is the substitution for "he could."

3. Nonsense words are included in the analysis; e.g., " . . . your life was endangered by the witless timasary testimony of the lorikeet."

4. Words that are clearly incomplete are not included in the analysis; e.g., "The crocodiles juh- stayed very still."

N.B.: Correction attempts are exceptions. (See "Correction" under "Guidelines for Analysis of Miscues and Cloze Responses," p. 246.)

Cloze Procedure

1. Sometimes more than one word is substituted for one blank word in the text, i.e., all words written in the blank which are not crossed out are included; e.g., " . . . he had to follow it on all of the country . . . ."

2. Nonsense words are included in the analysis; e.g., " . . . last night was slinte and clear . . . ."

3. Words that are clearly incomplete are not included in the analysis; e.g., "Crocodile noses began sticking togeth." "Togeth" is not analyzed. N.B.: Correction attempts are exceptions. (See "Correction" under "Guidelines for Analysis of Miscues and Cloze Responses," p. 246.)

4. The word counts as it is written, not what it might be simply because its spelling is similar to a word that would fit better; e.g., "I well send Turtle." "Well" is analyzed as "well" not "will." N.B.: Homonyms are exceptions. (See "Guidelines for Analysis of Miscues and Cloze Responses," #3 under "General Considerations," p. 241.)

APPENDIX G

GUIDELINES FOR ANALYSES OF MISCUES AND CLOZE RESPONSES

GUIDELINES FOR ANALYSES OF MISCUES

AND CLOZE RESPONSES

General Considerations

1. Analyze substitutions according to the T-units created by the reader; e.g., "The king will give a bag of gold to the animals who (they) are bigger in number than any other kind." The substitution of "they" for "who" converts one T-unit into two T-units.

2. When there is more than one substitution in a T-unit, each substitution may be analyzed either according to the text or the reader's responses, whichever makes the most acceptable structure; e.g., "But no (the) fruit fell (didn't) from the tree." "The" is analyzed according to the text, i.e., "But the fruit fell from the tree" because it is more acceptable than the reader's "But the fruit didn't from the tree." "Didn't" is analyzed according to the reader's response, i.e., "But the fruit didn't from the tree" because it is more acceptable than the text's "But no fruit didn't from tree."

3. When a response is a homonym, select the homonym which makes the most sense; e.g., "The stiff short legs seemed jointless, (to (two, too)) springless." "Too" is analyzed because it is most acceptable semantically.

Grammatical Function

1. Y--Some nonwords have endings which indicate function; e.g., "But something was smugging floating in the middle of the river."

2. P--A substitution is semantically unacceptable and may or may not serve the same grammatical function; e.g., ". . . his knee was pressing the wounded bull's frank flank." The sentence's semantics do not give enough information to determine if "frank" is a noun or an adjective.

3. N--Two words are substituted for one or one word for two and both words do not serve the same function as the one; e.g., (1) "The wind blew, rain pounded poured down, and thunder roared." and e.g., (2) "But the One man sighted Hawk's pony . . . ."

Syntactic Acceptability

1. Y--A substitution can be syntactically acceptable even though it is not semantically acceptable; e.g., " . . . the animal's gait began to flatter falter ."

2. A substitution will be scored "Y" if it serves an appropriate grammatical function unless there is: (a) a noun/verb disagreement, e.g., "Turtle . . . keep kept on whispering to himself." "Keep" is scored "P" i.e., acceptable to following portion of the T-unit; (b) an unacceptable verb tense, e.g., " . . . he did not knew know whether he could hang on to the pain-crazed bull or not." "Knew" is scored "P,"

i.e., acceptable to the following portion of the T-unit; (c) a noun/pronoun substitution that does not work, e.g., "The meat that was . . . over the rice house (it) was that of another animal." "It" is scored "P," i.e., acceptable to the following portion of the T-unit; or (d) a "to be"/helping verb/other verb substitution that does not work, e.g., (1) "No, you are (told) innocent." "Told" is scored "P," i.e., acceptable to the prior portion of the T-unit; and e.g., (2) "Dog had a small dinner and ran (had) off." "Had" is scored "P," i.e., acceptable to the prior portion of the T-unit.

3. Y--Some nonwords have endings which indicate grammatical function and acceptable syntax; e.g., "Hawk's horse, though trained (tained) as a buffalo hunter . . . ."

4. P or N--Needed articles are missing; e.g., (1) "He was carried along in the (with) surging brown tide." "With" is scored "P," i.e., is acceptable to prior T-unit and e.g., (2) " . . . he did not know whether he could hang on to the (buffalo) paincrazed bull or not." "Buffalo" is scored "N."

5. Y--A substitution scored as "P" for grammatical function (See "Grammatical Function" guideline #2, p. 242.) has as one of the alternative functions a syntactically acceptable one; e.g., " . . . his knee was pressing the wounded bull's flank (frank)." As a noun, "frank" would be syntactically acceptable.

Semantic Acceptability

1. N--Nonwords are unacceptable; e.g., " . . . the croctēiles crocodiles . . . "; exception: "Annōōflaydee A-nan-ul-fay-dee-ma,' he said . . . ." "Annooflaydee" is scored "Y" because "A-nan-ul-fay-dee-ma" itself is a nonword and the correct pronunciation of it is unimportant.

2. A substitution is semantically acceptable only as far as it is syntactically acceptable; e.g., "He was carried along in the with surging brown tide." "With" is scored "P" for syntactic acceptability (See "Syntactic Acceptability" guideline #4, above.) and, therefore, cannot score higher than "P_1" for semantic acceptability.

3. Substitutions at the beginning of T-units cannot score "P_1," e.g., "He The reached back." "The" is scored "N."

4. Substitutions at the end of T-units cannot score "P_2," e.g., " . . . the fruit would not fall down . . . no matter how hard he pulled people." "People" is scored "N."

Meaning Loss

1. Y--A nonword is totally incongruous to a story; e.g., " . . . the crocodiles croctēiles . . . "; exception: "'A-nan-ul-fay-dee-ma,' Annōō- flaydee he said . . . ." "Annooflaydee" is scored "P" because the only loss of meaning is the correct pronunciation of a nonword.

2. N--A substitution is scored "N" only when there is strictly no loss of meaning at the whole story level as in:

(a) contractions; e.g., "You're wise.", (b) synonyms; e.g., "They began to laugh.", (c) the/this/that, the/those/these and the/his substitutions sometimes; e.g., (1) "Small Deer wanted the fruit very much." There was only one fruit in the story; e.g., (2) "The King will give a bag of gold to the animals who are bigger in number . . ." and e.g., (3) " . . . his hoofs came down . . . ." The hoofs belonged to a bull, and (d) other instances; e.g., "The wise man is right." The old man is also referred to as the wise man in the story.

3. Y--A substitution is scored "Y" for meaning loss if it scored "N" for semantic acceptability; e.g., " . . . the people would not fall down . . . no matter how hard he pulled"; exception: Sometimes substitutions which maintain the root word or change verbal form are exceptions; e.g., (1) "Stumbled of horse or slip of rider would be fatal here," and (2) "He spoke to the new bird asking who he is." "Stumbled" and "is" are scored "P."

4. A substitution that is not totally semantically acceptable will cause some degree of meaning loss; e.g., "He didn't see a log that had fell across the trail." "Fell" is syntactically and semantically acceptable only to the following portion of the T-unit and is scored "P" for meaning loss.

5. A substitution that changes verbal tense will cause

some degree of meaning loss; e.g., "Make him our King . . . because he has (had) saved our lives." "Had" is scored "P."

6. N, P or M--The/a substitutions vary widely in degree of meaning loss; e.g., (1) "Tell me how to remember a (the) hard word." "The" is scored "N" because there is only one hard word in the story that anyone wants to remember; e.g., (2) "Tell us quickly said a (the) girl." "The" is scored "P" because it is unimportant to the story whether there is one girl or several girls; and e.g., (3) "Here and there, Small Deer could see a (the) crocodile nose sticking out." "The" is scored "M" because the fact that there are several crocodiles and not one is crucial to the story.

Correction

1. Correction attempts which are nonwords are included in the analysis; e.g., "The lorikeet is indeed idolyilegent. (elgent intelligent)"

2. Incomplete words are analyzed only if they are correction attempts; e.g., "A-nan-ul-fay-dee-ma. (A-no-uh-fray-dee-mēah)." The correction of "mēah" is scored "P" because a correction attempt was made and although a portion of the word was corrected, the entire word was not.

APPENDIX H

PERCENTAGES OF CLOZE AND MISCUE SUBSTITUTIONS ALONG THE CONTINUUMS IN THE FIVE PSYCHO-LINGUISTIC DIMENSIONS FOR INDIVIDUAL THIRD- AND SIXTH-GRADE SUBJECTS

GRADE THREE

Subject	Grammatical Function			Syntactic Acceptability			Semantic Acceptability			Meaning Loss			Correction		
		Close	Miscue		Close	Miscue		Close	Miscue		Close	Miscue		Close	Miscue
1	Y	67	86	Y	86	57	Y	86	29	N	24	29	Y	9.5	43
	P	0	0	P	5	43	T	0	14	P	48	14	P	0	0
	N	33	14	N	9	0	P_1	5	29	M	14	0	N	90.5	57
							P_2	0	14	Y	14	57			
							N	9	14						
2	Y	76	62.5	Y	84	75	Y	76	50	N	24	25	Y	8	62.5
	P	0	0	P	8	12.5	T	8	12.5	P	44	37.5	P	0	0
	N	24	37.5	N	8	12.5	P_1	4	12.5	M	20	0	N	92	37.5
							P_2	4	0	Y	12	37.5			
							N	8	25						
3	Y	81	67	Y	87.5	78	Y	81	67	N	31	33.3	Y	19	11
	P	0	0	P	12.5	22	T	6	0	P	50	11.1	P	0	0
	N	19	33	N	0	0	P_1	13	22	M	6	22.2	N	75	89
							P_2	0	0	Y	13	33.3			
							N	0	11						
4	Y	74	50	Y	89	75	Y	84	75	N	32	58.3	Y	0	33
	P	0	0	P	11	17	T	0	0	P	37	8.3	P	5	0
	N	26	50	N	0	8	P_1	16	17	M	26	8.3	N	95	67
							P_2	0	0	Y	5	25			
							N	0	8						
5	Y	78	60	Y	94	95	Y	83	65	N	17	45	Y	0	35
	P	0	0	P	6	5	T	11	30	P	61	25	P	6	10
	N	22	40	N	0	0	P_1	0	5	M	17	10	N	94	55
							P_2	6	0	Y	5	20			
							N	0	0						

Subject	Grammatical Function			Syntactic Acceptability			Semantic Acceptability			Meaning Loss			Correction		
		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue
6	Y	85	92	Y	85	92	Y	77	84	N	15.4	24	Y	23	20
	P	0	0	P	15	8	T	0	4	P	53.8	64	P	0	0
	N	15	8	N	0	0	P_1	15	8	M	15.4	4	N	77	80
							P_2	8	0	Y	15.4	8			
							N	0	4						
7	Y	67	82	Y	78	73	Y	78	73	N	11.1	9	Y	11	36
	P	0	0	P	22	27	T	0	0	P	77.7	82	P	11	0
	N	33	18	N	0	0	P_1	11	18	M	0	0	N	78	64
							P_2	0	9	Y	11.1	9			
							N	11	0						
8	Y	86	80	Y	93	80	Y	93	60	N	36	15	Y	0	15
	P	0	0	P	7	5	T	0	10	P	50	50	P	0	10
	N	14	20	N	0	15	P_1	7	10	M	7	5	N	100	75
							P_2	0	0	Y	7	30			
							N	0	20						
9	Y	100	76	Y	93	76	Y	79	66.7	N	7.1	23.8	Y	14	29
	P	0	0	P	7	19	T	0	9.5	P	57.1	47.6	P	0	0
	N	0	24	N	0	5	P_1	14	9.5	M	21.4	4.8	N	86	71
							P_2	7	4.8	Y	14.3	23.8			
							N	0	9.5						
10	Y	83	57	Y	92	61	Y	83.3	52.2	N	16.7	13	Y	8.3	48
	P	0	0	P	8	35	T	0	4.3	P	66.7	43.5	P	8.3	17
	N	17	43	N	0	4	P_1	8.3	34.8	M	0	4.3	N	83.3	35
							P_2	8.3	4.3	Y	16.7	39.1			
							N	0	4.3						

Subject	Grammatical Function			Syntactic Acceptability			Semantic Acceptability			Meaning Loss			Correction		
		Close	Miscue		Close	Miscue		Close	Miscue		Close	Miscue		Close	Miscue
11	Y	60	58	Y	64	58	Y	56	33	N	12	17	Y	4	17
	P	0	0	P	36	17	T	4	8	P	44	8	P	4	0
	N	40	42	N	0	25	P_1	24	17	M	8	17	N	92	83
							P_2	16	0	Y	36	58			
							N	0	42						
12	Y	71	68	Y	71.4	68	Y	57.1	60	N	0	4	Y	7	16
	P	0	0	P	21.4	24	T	0	4	P	21	56	P	0	0
	N	29	32	N	7.1	8	P_1	21.4	20	M	36	16	N	93	84
							P_2	7.1	4	Y	43	24			
							N	14.3	12						
13	Y	63	48	Y	63	64	Y	37	44	N	10.5	12	Y	0	16
	P	0	0	P	21	24	T	21	8	P	10.5	28	P	0	0
	N	37	52	N	16	12	P_1	26	20	M	16	20	N	100	84
							P_2	0	8	Y	63	40			
							N	16	20						
14	Y	74	48	Y	90	71	Y	63	43	N	16	9.5	Y	16	29
	P	0	0	P	5	19	T	21	14	P	47	38.1	P	0	0
	N	26	52	N	5	10	P_1	11	24	M	0	9.5	N	84	71
							P_2	0	0	Y	37	42.9			
							N	5	19						
15	Y	64	80	Y	68	88	Y	45	56	N	0	16	Y	0	40
	P	0	0	P	27	8	T	18	16	P	36	40	P	0	8
	N	36	20	N	5	4	P_1	23	12	M	23	8	N	100	52
							P_2	9	4	Y	41	36			
							N	5	12						

Subject	Grammatical Function			Syntactic Acceptability			Semantic Acceptability			Meaning Loss			Correction		
		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue
16	Y	68	48	Y	60	52	Y	52	36	N	8	16	Y	8	36
	P	4	0	P	36	40	T	4	12	P	36	20	P	4	12
	N	28	52	N	4	8	P_1	32	36	M	12	12	N	88	52
							P_2	4	0	Y	44	52			
							N	8	16						
17	Y	56	68	Y	68	80	Y	44	36	N	12	4	Y	0	40
	P	0	0	P	24	12	T	16	12	P	28	8	P	12	8
	N	44	32	N	8	8	P_1	28	8	M	8	28	N	88	52
							P_2	0	8	Y	52	60			
							N	12	36						
18	Y	64	48	Y	64	68	Y	36	36	N	12	20	Y	0	28
	P	0	4	P	36	20	T	16	8	P	28	16	P	0	0
	N	36	48	N	0	12	P_1	36	28	M	12	8	N	100	72
							P_2	12	8	Y	48	56			
							N	0	20						
19	Y	60	64	Y	64	80	Y	52	40	N	8	8	Y	4	16
	P	0	4	P	20	12	T	4	4	P	40	16	P	16	4
	N	40	32	N	16	8	P_1	16	8	M	16	16	N	80	80
							P_2	8	4	Y	36	60			
							N	20	44						
20	Y	64	71	Y	68	87.5	Y	48	50	N	16	17	Y	0	33
	P	0	0	P	16	0	T	12	12.5	P	28	21	P	0	0
	N	36	29	N	16	12.5	P_1	16	0	M	4	12	N	100	67
							P_2	4	0	Y	52	50			
							N	20	37.5						

GRADE SIX

Subject	Grammatical Function			Syntactic Acceptability			Semantic Acceptability			Meaning Loss			Correction		
		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue
1	Y	80	76	Y	90	84	Y	80	52	N	30	16	Y	10	40
	P	0	0	P	10	12	T	0	8	P	55	44	P	5	0
	N	20	24	N	0	4	P_1	10	12	M	0	0	N	85	60
							P_2	5	0	Y	15	40			
							N	5	28						
2	Y	94	72	Y	94	80	Y	87.5	52	N	25	28	Y	6	36
	P	0	0	P	6	16	T	0	8	P	63	28	P	6	8
	N	6	28	N	0	4	P_1	12.5	20	M	6	0	N	88	56
							P_2	0	4	Y	6	44			
							N	0	16						
3	Y	89	68	Y	95	76	Y	79	36	N	32	20	Y	11	24
	P	0	4	P	5	20	T	0	0	P	63	28	P	5	0
	N	11	28	N	5	4	P_1	16	40	M	0	0	N	84	76
							P_2	5	0	Y	5	52			
							N	0	24						
4	Y	75	60	Y	94	68	Y	75	40	N	37.5	24	Y	6	36
	P	0	4	P	6	20	T	6	12	P	50	28	P	19	0
	N	25	36	N	0	12	P_1	13	24	M	0	8	N	75	64
							P_2	0	4	Y	12.5	40			
							N	6	20						
5	Y	76	60	Y	92	80	Y	76	68	N	24	24	Y	4	8
	P	0	4	P	0	8	T	0	0	P	60	28	P	12	8
	N	24	36	N	8	12	P_1	16	20	M	0	20	N	84	84
							P_2	0	0	Y	16	28			
							N	8	12						

Subject	Grammatical Function			Syntactic Acceptability			Semantic Acceptability			Meaning Loss			Correction		
		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue		Cloze	Miscue
6	Y	80	60	Y	84	64	Y	84	32	N	32	4	Y	4	36
	P	0	0	P	16	32	T	0	16	P	56	28	P	12	4
	N	20	40	N	0	4	P_1	4	32	M	4	36	N	84	60
							P_2	12	8	Y	8	32			
							N	0	12						
7	Y	80	62.5	Y	88	87.5	Y	76	75	N	28	25	Y	0	12.5
	P	0	0	P	12	0	T	12	12.5	P	48	50	P	0	0
	N	20	37.5	N	0	12.5	P_1	12	0	M	0	25	N	100	87.5
							P_2	0	0	Y	24	0			
							N	0	12.5						
8	Y	80	76	Y	88	81	Y	84	66.7	N	24	29	Y	4	33
	P	0	0	P	8	19	T	4	4.8	P	56	29	P	4	0
	N	20	24	N	4	0	P_1	8	23.8	M	8	33	N	92	67
							P_2	0	4.8	Y	12	9			
							N	4	0						
9	Y	92	67	Y	96	87	Y	84	67	N	32	13.3	Y	0	33
	P	0	0	P	4	13	T	4	13	P	44	33.3	P	4	0
	N	8	33	N	0	0	P_1	4	7	M	8	20	N	96	67
							P_2	4	0	Y	16	33.3			
							N	4	3						
10	Y	60	83	Y	68	72	Y	52	44	N	16	16.7	Y	0	39
	P	0	0	P	28	28	T	12	6	P	40	38.9	P	4	0
	N	40	17	N	4	0	P_1	16	22	M	8	16.7	N	96	61
							P_2	12	22	Y	36	27.8			
							N	8	6						

Subject	Grammatical Function			Syntactic Acceptability			Semantic Acceptability			Meaning Loss			Correction		
		Close	Miscue		Close	Miscue		Close	Miscue		Close	Miscue		Close	Miscue
11	Y	72	56	Y	76	44	Y	48	28	N	16	30	Y	4	56
	P	0	0	P	12	44	T	0	8	P	36	16	P	8	8
	N	28	44	N	12	12	P_1	24	36	M	4	12	N	88	36
							P_2	4	8	Y	44	52			
							N	24	20						
12	Y	64	72	Y	80	64	Y	40	24	N	8	0	Y	0	28
	P	0	4	P	12	32	T	16	8	P	32	36	P	4	8
	N	36	24	N	8	4	P_1	28	24	M	12	4	N	96	64
							P_2	0	8	Y	48	60			
							N	16	36						
13	Y	56	80	Y	64	76	Y	32	20	N	8	12	Y	0	24
	P	0	0	P	28	24	T	12	8	P	28	8	P	8	4
	N	44	20	N	8	0	P_1	40	36	M	12	0	N	92	72
							P_2	8	0	Y	52	80			
							N	8	36						
14	Y	50	60	Y	68	64	Y	28	24	N	0	12	Y	0	16
	P	0	0	P	20	12	T	24	4	P	44	24	P	16	0
	N	48	40	N	12	24	P_1	28	12	M	8	4	N	84	84
							P_2	8	4	Y	48	60			
							N	12	56						
15	Y	64	48	Y	68	56	Y	36	16	N	12	4	Y	0	20
	P	0	0	P	20	28	T	16	8	P	24	16	P	0	4
	N	36	52	N	12	16	P_1	28	20	M	8	0	N	100	76
							P_2	4	4	Y	56	80			
							N	16	52						

Subject	Grammatical Function			Syntactic Acceptability			Semantic Acceptability			Meaning Loss			Correction		
		Close	Miscue		Close	Miscue		Close	Miscue		Close	Miscue		Close	Miscue
16	Y	72	56	Y	80	56	Y	52	28	N	16	4	Y	0	24
	P	0	0	P	16	28	T	12	16	P	40	24	P	0	0
	N	28	44	N	4	16	P_1	24	24	M	8	20	N	100	76
							P_2	8	4	Y	36	52			
							N	4	28						
17	Y	52	52	Y	72	40	Y	52	16	N	12	8	Y	0	16
	P	4	0	P	20	44	T	12	4	P	40	16	P	0	0
	N	44	48	N	8	16	P_1	12	36	M	4	16	N	100	84
							P_2	8	12	Y	44	60			
							N	16	32						
18	Y	44	60	Y	68	60	Y	36	40	N	0	4	Y	0	20
	P	4	0	P	20	28	T	12	8	P	24	44	P	4	0
	N	52	40	N	12	12	P_1	24	28	M	20	24	N	96	80
							P_2	8	8	Y	56	28			
							N	20	16						
19	Y	32	64	Y	44	60	Y	24	4	N	12	0	Y	0	12
	P	4	0	P	24	28	T	0	12	P	16	16	P	12	16
	N	64	36	N	32	12	P_1	20	24	M	0	28	N	88	72
							P_2	8	20	Y	72	56			
							N	48	40						
20	Y	48	56	Y	48	56	Y	20	24	N	8	4	Y	0	16
	P	8	0	P	32	20	T	16	4	P	12	20	P	8	12
	N	44	44	N	20	24	P_1	24	8	M	4	12	N	92	72
							P_2	4	8	Y	76	64			
							N	36	56						

APPENDIX I

WOODCOCK COMPREHENSION STANINES AND QUANTITATIVE CLOZE ANALYSIS OF TEST STORIES

"War on Small Deer"

Grade Three

Subject	Woodcock Stanine	Cloze Percentage	Readability Level[a]
7	8	82	capacity
10	7	76	capacity
6	8	72	capacity
9	7	72	capacity
8	7	72	capacity
12	6	66	capacity
14	5	58	independent
15	5	54	instructional
16	5	44	instructional
13	5	40	instructional

[a]Frustration--0-34% The student is gaining little or no information from the material.

Instructional--35-54% The student is benefitting from reading the material but will need considerable teacher assistance in learning.

Independent--55-64% The student can process the information easily on his own and will need little or no teacher direction in comprehending the author's meaning.

Capacity--65% and over The student needs materials that will be more challenging. These materials are too easy and motivation may lag (K. Jongsma, 1980, p. 113).

"Name of the Tree"

Grade Three

Subject	Woodcock Stanine	Cloze Percentage	Readability Level
3	8	68	capacity
5	8	64	independent
4	8	62	independent
1	9	58	independent
2	8	50	instructional
19	5	48	instructional
18	5	42	instructional
20	5	40	instructional
11	6	34	frustration
17	5	30	frustration

"Why the Parrot Repeats Man's Words"

Grade Six

Subject	Woodcock Stanine	Cloze Percentage	Readability Level
2	8	68	capacity
3	8	62	independent
4	8	58	independent
1	9	58	independent
5	7	48	instructional
11	4	38	instructional
15	3	38	instructional
12	4	36	instructional
14	4	28	frustration
13	4	18	frustration

"First Kill"

Grade Six

Subject	Woodcock Stanine	Cloze Percentage	Readability Level
7	7	44	instructional
10	7	36	instructional
9	7	34	frustration
8	7	32	frustration
6	7	30	frustration
16	3	18	frustration
17	3	16	frustration
18	3	16	frustration
19	3	8	frustration
20	3	8	frustration

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